Dudek and Associates, Inc., "2003 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area, Los Angeles County, California" (June 2004; 2004C)

2003 Sensitive Plant Survey Report

Newhall Ranch

JUNE 2004

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2003 Sensitive Plant Survey Results

for

Newhall Ranch Specific Plan Area
Los Angeles County, California

Prepared for:

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2003 Sensitive Plant Survey Results
Newhall Ranch Specific Plan Area

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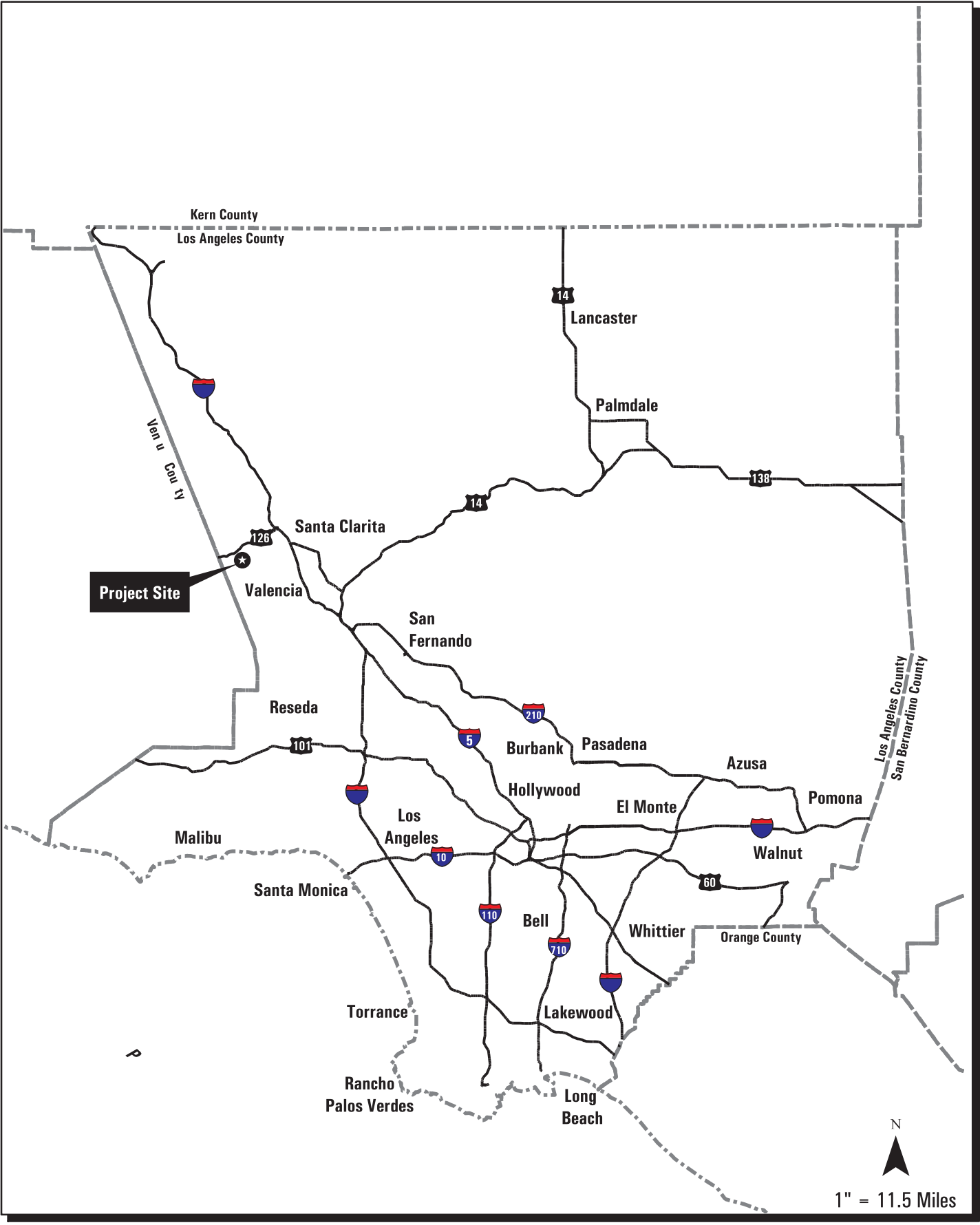
1.0 INTRODUCTION

The purpose of this report is to document the results of surveys for sensitive plant species within the approximately 7,778-acre Newhall Ranch Specific Plan Area (NRSPA) for the 2003 field season. Surveys placed an emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS) and to document all other sensitive plant species observed while conducting the SFVS surveys within the Newhall Ranch Specific Plan Area (NR SPA) for the 2003 field season.

2.0 SITE DESCRIPTION

The NR SPA study area is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (*Figure 1*). It lies roughly one-half mile west of Interstate 5 and largely southwest of the junction of I-5 and State Route 126 (SR-126), with portions of the Specific Plan site located in San Martinez Grande and Chiquito canyons north of SR-126. The City of Santa Clarita is located to the east of the study area and the Ventura County/Los Angeles County line lies along the western boundary. Site elevations range from 825 feet above mean sea level (AMSL) in the Santa Clara River bottom at the Ventura County/Los Angeles County line to approximately 3,200 feet AMSL on the ridgeline of the Santa Susana Mountains along the southern boundary (*Figure 2*).

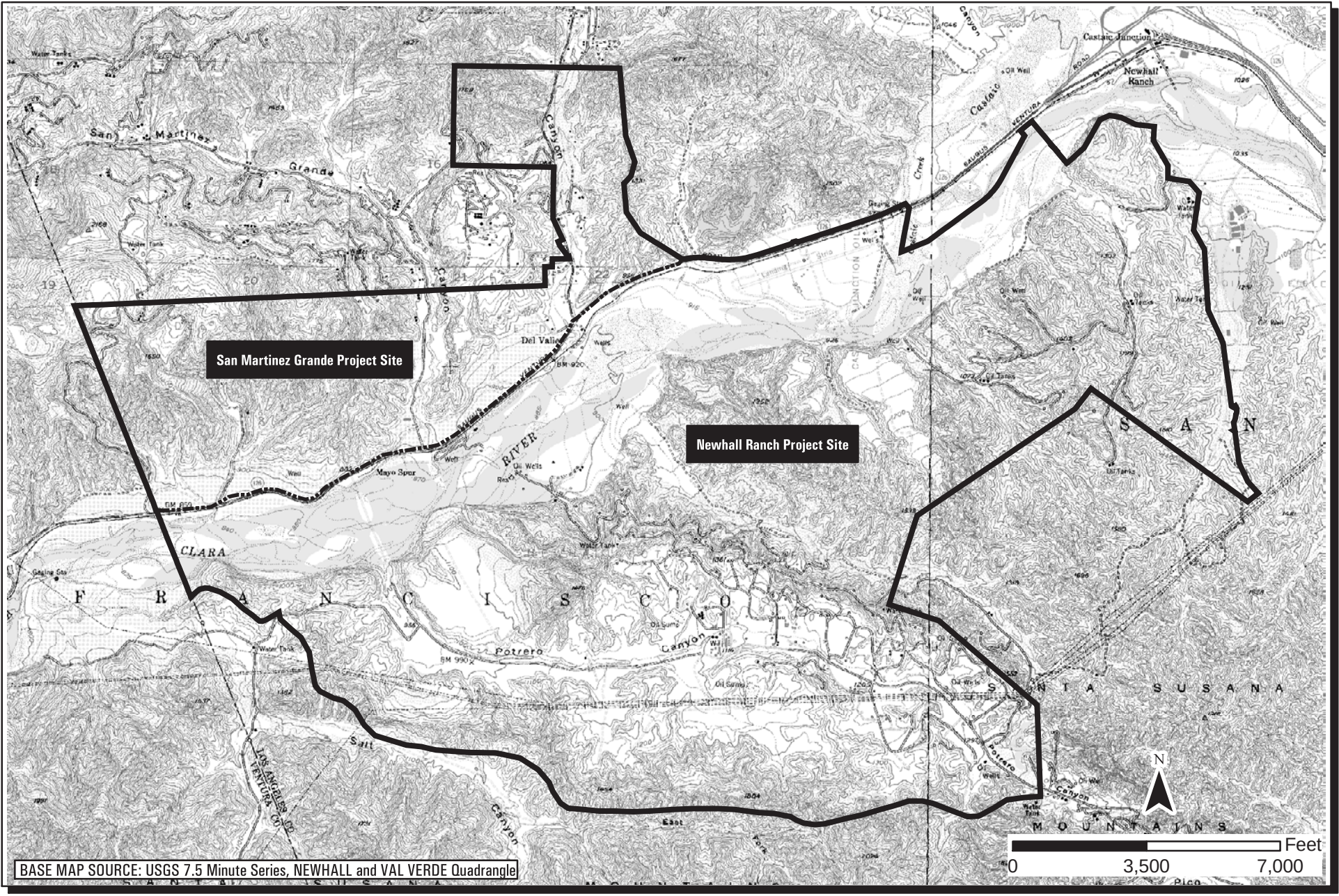
Dudek & Associates, Inc. (Dudek) surveyed for sensitive plant species with varying levels of specificity within areas that are designated for development according to the approved Specific Plan. The NR SPA consists of approximately 7,778 acres, with the study area containing approximately 6,644 acres (*Figure 3*). The study area includes areas north of SR-126 between Chiquito Canyon west to the Ventura County line; south of SR-126, it includes areas between the Airport Mesa and Potrero Canyon, including Middle, Dead-End, Lion, Humble, and Long canyons. However, the active channel in the Santa Clara River, agriculture fields (e.g., Potrero Mesa) and areas proposed for conservation (most notably the "High Country" area) were excluded from the study area. This study area is dominated by east-, west-, and northwest-trending primary ridges, with north- and south-trending secondary ridges. Site elevations range from approximately 850 feet AMSL in the Santa Clara River floodplain to approximately 2,000 feet AMSL along the ridgeline, which separates Potrero Canyon from Salt Creek Canyon and Grave Canyon. Slope gradients



Newhall Ranch/San Martinez Grande

Regional Map

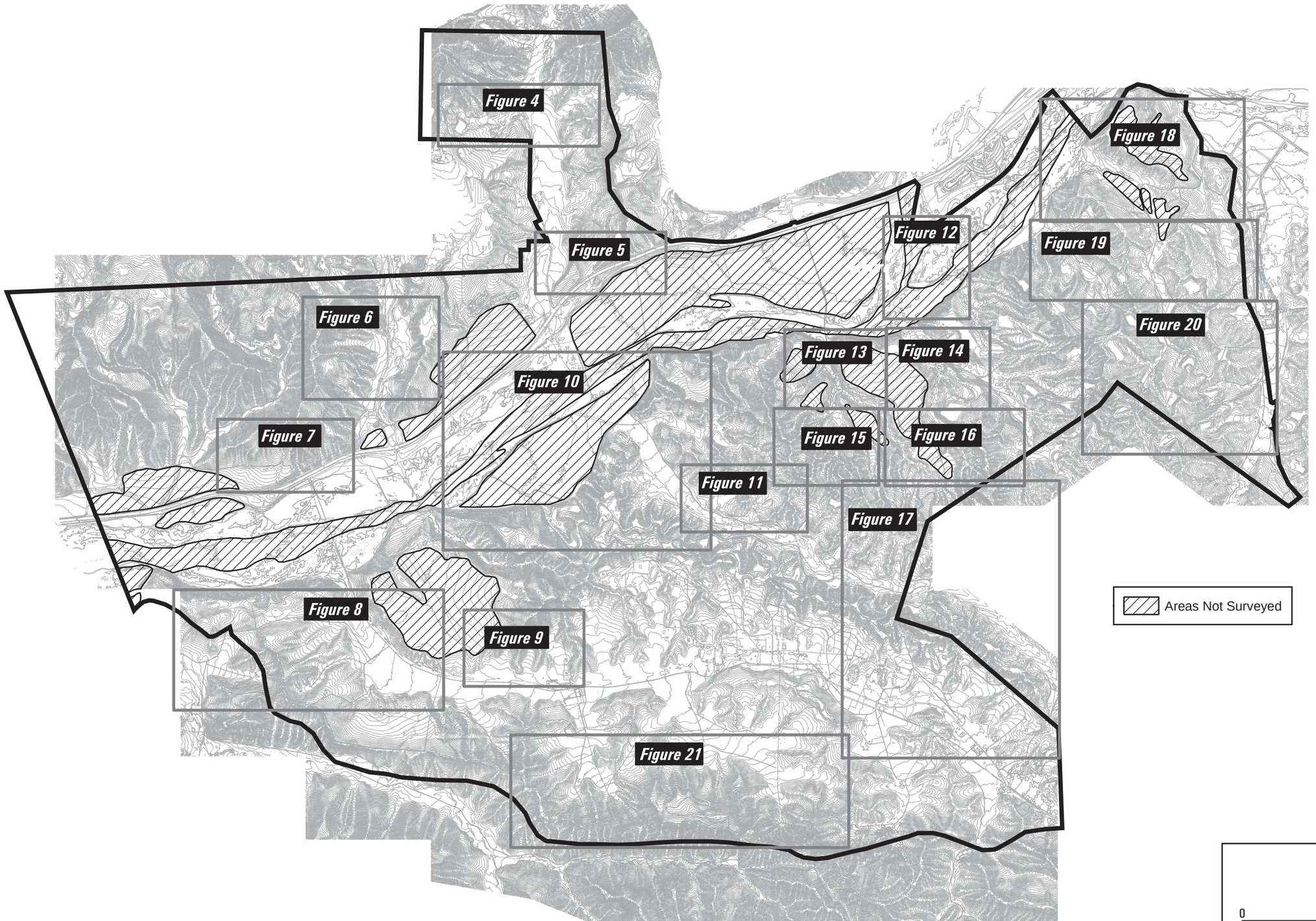
FIGURE 1



Newhall Ranch/San Martinez Grande

Vicinity Map

FIGURE 2



Newhall Ranch/San Martinez Grande

Index Map

FIGURE 3

range from moderate to very steep in the hillside areas to very gentle within the Santa Clara River floodplain, tributary canyons and associated mesas. Distinctive elevated geographic features include Sawtooth Ridge; Razorback Ridge; Windy Gap; Ayers Rock; and Potrero, Grapevine, and Airport Mesas.

2.1 Plant Communities and Land Covers

Native and naturalized habitats within the study area are representative of those found in this region and provide examples of those plant communities found in the Santa Susana Mountains and the Santa Clara River ecosystems. Upland habitats dominate the landscape within the study area both north and south of the Santa Clara River. The major upland plant communities include California sagebrush, California buckwheat, chamise and mixed chaparral, live and valley oak woodlands, and non-native grassland. The Santa Clara River supports a variety of riparian plant communities. These include southern cottonwood-willow riparian forest, southern willow scrub, mulefat scrub, arrow weed scrub, and freshwater marsh and seeps. Intermittent and ephemeral drainages onsite also provide habitat for alluvial and scalebroom scrubs.

The Newhall Land and Farming Company leases out portions of the study area for oil and natural gas production, as well as for cattle grazing and agricultural operations (e.g., food crop production, dryland farming, honey farming). All such operations are currently ongoing. Grazing activities and oil and natural gas production have had a noticeable effect on much of the natural habitat onsite. Scrub habitats have been displaced by non-native grasslands as a result of grazing. Southern California Edison and Southern California Gas Company have distribution lines within easements onsite as well.

2.2 Geology and Soils

Geologically, the study area is located within the Transverse Ranges geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed. They are cut by segments of the Del Valle and Salt Creek faults. Bedrock formations found onsite include the Modelo, Towsley, Pico, Saugus, and Pacoima formations, as well as Quaternary Terrace

deposits. Surficial deposits include Quaternary alluvium, slopewash, soil, and artificial fill (Allan E. Seward 2002).

3.0 SURVEY METHODS

Data regarding botanical resources present on the project site were obtained through a review of the pertinent literature; field reconnaissance; and focused surveys for sensitive species, with varying levels of specificity; all of which are described below.

3.1 Literature Review

General floristic and sensitive botanical resources present or potentially present at Newhall Ranch were identified through a literature search using the following sources: the California Natural Diversity Database for the Newhall Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi, Thousand Oaks, and Val Verde quadrangle maps (CNDDB, January 2003); *2002 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area Los Angeles County, California* (Dudek 2002); *Biological Resource Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, November 2000); CalFlora (University of California, Berkeley, May 2002); U.S. Fish and Wildlife Service (USFWS 1999); California Department of Fish and Game (CDFG 2002); *Inventory of Rare and Endangered Plants of California* (CNPS 2001); *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999); *Checklist of Rare Ventura County Plant Species* (Magney 2002); *A Flora of the Santa Barbara Region, California* (Smith 1976); *A Flora of the Santa Monica Mountains* (Raven *et al.* 1986); *Biology of the San Fernando Valley Spineflower, Ahmanson Ranch, Ventura County, California* (Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. 2000); *Report to the Fish and Game Commission on the Status of San Fernando Valley Spineflower* (CDFG 2001); *Biota Report, Newhall Ranch Specific Plan* (RECON and Impact Sciences, Inc. 1996); and herbarium specimens from Rancho Santa Ana Botanic Garden (RSA) and the University of California, Riverside Herbarium (UCR). General information regarding vegetation communities was obtained from Holland (1986) and Sawyer and Keeler-Wolf (1995). Plant species nomenclature follows Hickman (1993).

3.2 Field Reconnaissance Methods

Botanical surveys were conducted by Dudek staff biologists, with assistance provided by Anuja Parikh and Nathan Gale of FL*x* and Andrew C. Sanders of the University of California, Riverside. All surveys were conducted on-foot and remote areas were accessed using four-wheel drive vehicles. Surveys were conducted in teams of two or more biologists, with at least one senior-level biologist included with each team. Resumes for survey personnel are provided in *Appendix A.*

Botanical surveys of the site were conducted between June and August of 2003 in accordance with the schedule provided in *Table 1*. A minimum of 1,690 person-hours (169 person-days) was spent conducting botanical surveys within the study area. Biologists were able to observe reference populations of SFVS and other sensitive species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused the identification and location of populations of SFVS; incidental observations of other state- and federally-listed and California Native Plant Society (CNPS) Lists 1A, 1B, and 2 species would be noted (see the list of target species in *Table 2*).

TABLE 1
Survey Schedule & Personnel
Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
6-11-03	Mark Elvin, Anuja Parikh, Nathan Gale, Dave Flietner, Scott Boczkiewicz, and Tricia Wotipka	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area
6-12-03	Mark Elvin, Anuja Parikh, Nathan Gale, Dave Flietner, Scott Boczkiewicz, and Tricia Wotipka	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area and Potrero Canyon
6-17-03	Anuja Parikh and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area
6-18-03	Mark Elvin, Andrew Sanders, Anuja Parikh, Nathan Gale, Vipul Joshi , Doug Gettinger, Kam Muri, And Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area and Homestead, Off-Haul, San Martinez Grande, and Homestead canyons
6-19-03	Mark Elvin, Andrew Sanders, Anuja Parikh, Nathan Gale, Vipul Joshi , Doug Gettinger, Kam Muri, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	San Martinez Grande and Mid-Martinez canyons

TABLE 1
Survey Schedule & Personnel
Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
6-20-03	Mark Elvin, Andrew Sanders, Kim Marsden, Doug Gettinger, Kam Muri, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Mid-Martinez, San Martinez Grande, and Chiquito canyons
6-21-03	Kim Marsden and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon
6-23-03	Anuja Parikh and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Homestead and Off-Haul canyons
6-24-03	Anuja Parikh, Nathan Gale, Megan Enright, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Chiquito, Homestead, and Off-Haul canyons
6-25-03	Anuja Parikh, Nathan Gale, Megan Enright, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Chiquito Canyon
6-26-03	Megan Enright, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Chiquito and Potrero canyons
6-27-03	Megan Enright, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Chiquito and Potrero canyons
6-30-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport and Grapevine Mesa areas
7-1-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Exxon and Grapevine Mesa areas
7-2-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Grapevine Mesa area
7-3-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS, noting other sensitive plant species when observed, surveys for sensitive species in areas with the need for erosion control	Grapevine Mesa area
7-7-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Grapevine Mesa area
7-8-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport and Grapevine Mesa areas
7-9-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport and Grapevine Mesa areas and Chiquito Canyon for a water pipe

TABLE 1
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Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
7-10-03	Mark Elvin, Anuja Parikh, and Nathan Gale	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport and Grapevine Mesa areas
7-15-03	Andrew Sanders, Cathleen Weigand, and Doug Gettinger	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area
7-16-03	Andrew Sanders, Anuja Parikh, Nathan Gale, Tricia Wotipka, Cathleen Weigand, and Doug Gettinger	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area and Dead-End Canyon
7-17-03	Andrew Sanders, Anuja Parikh, Nathan Gale, Vipul Joshi, Tricia Wotipka, Cathleen Weigand, and Doug Gettinger	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Lion and Exxon canyons
7-18-03	Andrew Sanders, Anuja Parikh, Nathan Gale, Vipul Joshi, Tricia Wotipka, Cathleen Weigand, and Doug Gettinger	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Airport Mesa area, mesas west of Grapevine Mesa, Sawtooth Ridge area, and Humble Canyon
7-22-03	Michelle Balk and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Grapevine Mesa and Lion's Canyon
7-23-03	Michelle Balk and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Grapevine Mesa and Lion's Canyon
7-24-03	Darren Smith, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Mesas west of Grapevine Mesa and Long Canyon
7-25-03	Darren Smith, Michelle Balk, and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
7-26-03	Darren Smith and Dave Flietner	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
7-29-03	Tricia Wotipka and Kam Muri	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
7-30-03	Tricia Wotipka and Kam Muri	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
7-31-03	Tricia Wotipka, Kam Muri, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon

TABLE 1
Survey Schedule & Personnel
Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
8-1-03	Kim Marsden, Tricia Wotipka, Kam Muri, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
8-2-03	Kim Marsden and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long Canyon
8-4-03	Andrew Sanders, Cathleen Weigand, Dave Flietner, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Long and Potrero canyons
8-5-03	Andrew Sanders, Cathleen Weigand, Dave Flietner, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon
8-6-03	Mark Elvin, Andrew Sanders, Cathleen Weigand, Dave Flietner, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon and areas along the Santa Clara River
8-7-03	Mark Elvin, Andrew Sanders, Cathleen Weigand, Dave Flietner, and Paul Lemons	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon and areas along the Santa Clara River
8-8-03	Mark Elvin and Kim Marsden	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon and areas along the Santa Clara River
8-9-03	Mark Elvin and Kim Marsden	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Areas along the Santa Clara River
8-11-03	Tricia Wotipka and Scott Boczkiewicz	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon
8-12-03	Tricia Wotipka and Scott Boczkiewicz	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon
8-13-03	Mark Elvin, Tricia Wotipka, and Scott Boczkiewicz	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon and areas along the Santa Clara River
8-14-03	Mark Elvin, Tricia Wotipka, and Scott Boczkiewicz	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon and areas along the Santa Clara River and Castaic Creek
8-15-03	Mark Elvin, Kim Marsden, and Cathleen Weigand	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon
8-16-03	Kim Marsden and Cathleen Weigand	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Potrero Canyon

TABLE 1
Survey Schedule & Personnel
Newhall Ranch Specific Plan Area

DATE	BIOLOGISTS	PURPOSE	GENERAL GEOGRAPHIC AREA
8-21-03	Megan Enright and Michelle Balk	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Areas along the Santa Clara River
8-22-03	Megan Enright and Michelle Balk	Focused survey for and mapping of SFVS and noting other sensitive plant species when observed	Areas along the Santa Clara River

TABLE 2
Sensitive Plant Species Subject of Field Surveys

Scientific Name	Common Name
Arenaria paludicola	marsh sandwort
Astragalus brauntonii	Braunton's milk-vetch
Atriplex coulteri	Coulter's saltbush
Atriplex serenana var. *davidsonii*	Davidson's saltscale
Baccharis malibuensis	Malibu baccharis
Berberis nevinii	Nevin's barberry
Brodiaea filifolia	thread-leaved brodiaea
Calochortus clavatus var. *clavatus*	club-haired mariposa lily
Calochortus clavatus var. *gracilis*	slender mariposa lily
Calochortus plummerae	Plummer's mariposa lily
Calochortus weedii var. *vestus*	late-flowered mariposa lily
Calystegia peirsonii	Peirson's morning-glory
Calystegia sepium ssp. *binghamiae*	Santa Barbara morning-glory
Centromadia [=*Hemizonia*] *parryi* ssp. *australis*	southern tarplant
Cercocarpus betuloides var. *blancheae*	island mountain-mahogany
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower
Deinandra [=*Hemizonia*] *minthornii*	Santa Susana tarplant
Dodecahema leptoceras	slender-horned spineflower
Dudleya blochmaniae var. *blochmaniae*	Blochman's dudleya
Dudleya cymosa ssp. *marcescens*	marcescent dudleya
Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya
Dudleya multicaulis	many-stemmed dudleya
Dudleya parva	Conejo dudleya
Erodium macrophyllum	round-leaved filaree
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower

TABLE 2
Sensitive Plant Species Subject of Field Surveys

Scientific Name	Common Name
Horkelia cuneata var. *puberula*	mesa horkelia
Juglans californica	southern California black walnut
Juncus acutus var. *leopoldii*	Southwestern spiny rush
Malacothamnus davidsonii	Davidson's bush mallow
Nama stenocarpum	mud nama
Nolina cismontana	chaparral nolina
Opuntia basilaris var. *brachyclada*	short-joint beavertail
Oxytheca parishii var. *abramsii*	Abram's oxytheca
Pentachaeta lyonii	Lyon's pentachaeta
Rorippa gambellii	Gambel's water cress
Senecio aphanactis	rayless ragwort
Sidalcea neomexicana	salt spring checkerbloom
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern

All plant species encountered during the field surveys were identified and recorded for inclusion in *Appendix B*. The majority of these were vouchered and will be reposited at the herbarium at the University of California, Riverside. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993) or other recent published taxonomic treatments. Where not listed in Hickman (1993), common names were taken from Abrams (1923). Where not found in this reference, a variety of sources were used (*e.g.*, Abrams 1923, Dale 1986, or Roberts 1998).

Surveys on the NR SPA during the 2003 field season focused on the observation of current year SFVS plants with incidental observations of any other sensitive plants being recorded. Surveys for SFVS were focused in open areas of California sagebrush-purple sage series, California buckwheat and California annual grassland series (Sawyer and Keeler-Wolf 1995) on ridgelines, slopes, and escarpments with a southern, southwestern, or southeastern exposure based on information gathered during the documentation of SFVS populations flagged by CDFG; information gathered during surveys by Dudek for SFVS populations on the Newhall Ranch project site during 2002; information contained in the report prepared by Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. (2000); the status report prepared for the Fish and Game Commission (CDFG 2000); and conversations with Rick Reifner, the botanist who re-discovered SFVS at Ahmanson Ranch in 1999.

While surveying in the field and mapping SFVS, a four-meter (13.1 feet) rule was used to separate polygons for mapping purposes. This distance is a heuristic mapping tool based on the topography, vegetation, detectability of the plants, the general accuracy of the GPS, and time constraints. This heuristic criterion is not specifically tied to SFVS biology (*i.e.*, reproductive biology, seed dispersal) and thus is not intended to reflect reproductively isolated sub-populations, the total extent of the SVFS seed bank, or any other feature of the species life history.

The outer perimeter of each spineflower polygon was searched in one continuous direction until returning to the starting point, with plants being located within at least every one to four m along the boundary, and points were stored with a Trimble GPS (that has sub-meter accuracy) manually to form the boundaries of the polygon. GPS points were taken every one to four meters. Each SFVS polygon was given a unique identifier (*i.e.*, numbers and/or letters) in the field. Field data sheets were completed for each of the spineflower polygons that include data on site conditions (*i.e.*, plant number estimates, associated species) (*Appendix C*). Polygons were analyzed in the lab and delineated based on a four meter minimum convex polygon rule (all polygons within four m of each other will be joined using GIS software (*e.g.*, ArcGIS, AutoCAD), then delineated as one polygon with the outer boundary represented by a minimum convex polygon.

A modified magnitude scale was used to arrive at an estimate of the number of spineflower individuals (or other sensitive species when observed) within each polygon. After mapping the boundaries of the polygon, the number of individuals were counted/estimated in a rectangular "sample estimation area" (to account for the "clumped" nature of this species), which is a subset of the total polygon. The sample estimation area was between 200 cm^2 (10 by 20 cm) and two m^2 (one m by two m) depending on various factors regarding the polygon (*e.g.*, size of the polygon, plant densities, variations in plant densities within the polygon). The number of subsets within the total polygon was determined and added/multiplied, resulting in a total estimate of the number of individuals of the polygon (*e.g.*, 4x125=500, 8x12=96, 9x100=900). This number was then rounded to the nearest magnitude or multiple of a magnitude (*e.g.*, 500; 100; 1,000).

Polygons for other sensitive species were mapped with the GPS unit, by drawing polygons on maps with aerial photography and topographic lines, or by a combination of the two. Professional judgment and experience were used to delineate these polygons based on the detectability of the species, topography, and vegetation. Perennial sensitive plants were

mapped at a 10 to 20 m scale due to their population dynamics (including seed dispersal and pollination range), observability, habit, habitat limitations, and mapping accuracy. Information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1* through *4.2.10*).

3.2.1 Sensitive Plant Species

Sensitive plant species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes. This includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001; *Inventory*), and those plant species which are found on the list of "Threatened and Endangered Species and Species of Concern, Los Angeles County" (http://www.losangelesalmanac.com/topics/Environment/ ev14b.htm). CNPS List 3 or List 4 species were included in discussions only when encountered during the field surveys.

3.2.2 Survey Limitations

Surveys were conducted in the spring and summer of 2003. Surveys were conducted during a year with a "normal" amount of rainfall providing ideal conditions to determine the diversity of species (including sensitive plants) onsite and to map their presence, abundance, and distributions more accurately (when necessary). The timing of the surveys was coincident with the blooming period for SFVS and other early blooming annual species. Surveys continued passed the peak bloom period for the SFVS into the summer when SFVS became a highly visible brick red while all of the other plants dried and faded to pale straw colors. Surveying during these two time periods maximized the potential for detection of SFVS during the survey effort.

Not all portions of the Santa Clara River were surveyed (see *Figure 3*) and areas of dense chaparral were not surveyed. Surveys along the Santa Clara River were conducted in areas where bank stabilization projects may occur. Surveys for SFVS were concentrated in areas of suitable habitat, which was generally in openings in the vegetation and/or on south-facing slopes. Other sensitive species (particularly those identified in *Table 2*) were recorded when observed.

The focused surveys for SFVS were conducted during daylight hours under weather conditions that did not preclude observation of sensitive plant species (*e.g.*, surveys were not conducted during heavy fog or rain).

4.0 RESULTS OF SURVEYS

4.1 Botany - Floral Diversity

The study area is situated at the nexus of the Transverse Ranges, Coast Ranges, Sierra Nevada, Mojave Desert, and coastal plains (Hickman 1993). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999). As such, a high diversity of plant species is expected during a year of average rainfall for the area.

At least 526 plant species were identified within the Newhall Ranch study area. Of these, 380 species (or 72 percent) are native to the region and 146 species (or 28 percent) are non-native. It should be noted that agricultural or clearly disturbed areas were not thoroughly searched. The list of plant species identified within the study area in 2003 is provided as *Appendix B*.

4.2 Sensitive Plant Species

A total of 10 sensitive plant species were identified within the study area. These and other sensitive species that have the potential to occur within the Newhall Ranch project area, based on the presence of suitable habitat and soils, are listed in *Table 3.* This list is confined primarily to those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B, or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001). Those sensitive species that were observed during the 2003 field surveys are discussed in greater detail. A number of species found on CNPS Lists 3 or 4 also have the potential to occur onsite (*e.g., Calochortus catalinae, Acanthomintha obovata* ssp. *cordata, Mucronea californica*); however, due to their relatively low sensitivity level, they are only discussed in the following sections if observed onsite.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Arenaria paludicola	marsh sandwort	FE/SE	1B	dense freshwater marsh/perennial herb/May-August	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Santa Ana River. Limited suitable habitat onsite; very low likelihood of occurrence within the study area.
Astragalus brauntonii	Braunton's milk-vetch	FE/None	1B	chaparral, coastal sage scrub, grasslands; often on carbonate substrates/perennial herb/March-July	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
Atriplex coulteri	Coulter's saltbush	None/None	1B	coastal sage scrub and grasslands on alkaline or clay substrate/perennial herb/March-October	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, suitable habitat present onsite. Moderate likelihood of occurrence within study area.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None	1B	coastal bluff scrub and coastal sage scrub on alkaline substrate/annual herb/May-October	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. *Atriplex serenana var. serenana* observed onsite. Low likelihood of occurrence within the study area.
Baccharis malibuensis	Malibu baccharis	None/None	1B	chaparral, coastal sage scrub, cismontane woodland/ deciduous shrub/August	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; closest known populations in the western Santa Monica Mountains near Malibu. Not expected to occur within the study area.
Berberis nevinii	Nevin's barberry	FE/SE	1B	chaparral, coastal sage scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate/evergreen shrub/March-April	Not observed during 2003 field season. CNDDB records exist for San Francisquito Canyon at confluence with Santa Clara River; suitable habitat present onsite. Moderate likelihood of occurrence within study area.
Brodiaea filifolia	thread-leaved Brodiaea	FT/SE	1B	clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in San Dimas. Suitable habitat present onsite. Low likelihood of occurrence within study area.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Calochortus clavatus var. *clavatus*	club-haired mariposa lily	None/None	4	chaparral and coastal sage scrub/ perennial herb (geophyte)/March-May	Not observed during 2003 field season. No CNDDB records exist for Newhall and Val Verde quads. Very low likelihood of occurrence in study area.
Calochortus clavatus var. *gracilis*	slender mariposa lily	None/None	1B	chaparral and coastal sage scrub/perennial herb (geophyte)/March-May	Observed during the 2003 field season on north tending slopes throughout the study area. A total of 79 polygons were mapped with an estimated 2,750 fruiting individuals during the 2003 growing season. CNDDB records also exist for mouth of Pico Canyon.
Calochortus plummerae	Plummer's mariposa lily	None/None	1B	chaparral, coastal sage scrub, cismontane woodland, grasslands on rocky granitic substrate/perennial herb (geophyte)/May-July	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, records exist for the Santa Susana Mountains and Simi Hills. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
Calochortus weedii var. *vestus*	late-flowered mariposa lily	None/None	1B	chaparral, cismontane & riparian woodland/perennial herb (geophyte)/ June-August	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, habitat similar to where species occurs in eastern Ventura County is present onsite. This species was observed at the head of the Salt Creek drainage in the Santa Susana Mountains to the southwest during the 2003 field season. Moderate likelihood of occurrence within study area.
Calystegia peirsonii	Peirson's morning-glory	None/None	4	chaparral, coastal sage scrub, cismontane woodland, grassland/ perennial herb/May-June	Observed in chaparral and California sagebrush throughout the survey area.
Calystegia sepium ssp. *binghamiae*	Santa Barbara morning-glory	None/None	1A	marshes and swamps/perennial herb/ April-May	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, limited suitable habitat present onsite. Low likelihood of occurrence within study area.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Centromadia [=*Hemizonia*] *parryi* ssp. *australis*	southern tarplant	None/None	1B	mesic edges of marshes in grasslands/annual herb/May-November	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, suitable habitat present onsite. Low likelihood of occurrence within study area.
Cercocarpus betuloides var. *blancheae*	island mountain-mahogany	None/None	4	chaparral, closed-cone coniferous forest/evergreen shrub/February-May	Observed in mixed chaparral in the study area.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE	1B	Coastal sage scrub, sandy soils/annual herb/April-June	Observed onsite in five general areas within the survey area: Airport Mesa, Grapevine Mesa, Long Canyon, Potrero Canyon, and San Martinez Grande Canyon. A total of 193 polygons were mapped with an estimated 4,594,610 individuals during the 2003 growing season.
Deinandra [=*Hemizonia*] *minthornii*	Santa Susana tarplant	None/SR	1B	chaparral and coastal sage scrub on rocky substrate/deciduous shrub/July-November	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however, records exist for the Simi Hills and Oat Mountain. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
Delphinium parryi ssp. *blochmaniae*	dune larkspur	None/None	1B	maritime chaparral, coastal dunes/ perennial herb/ April-may	Not observed during 2003 field season. No likelihood of occurrence.
Dodecahema leptoceras	slender-horned spineflower	FE/SE	1B	Alluvial scrub on sandy substrate/annual herb/April-June	Not observed during 2003 field season; however, Santa Clara River bottom excluded from survey area. Historic CNDDB records exist for the Newhall or Val Verde quads in alluvial habitat similar to those present onsite. Moderate likelihood of occurrence within study area.
Dudleya blochmaniae var. *blochmaniae*	Blochman's dudleya	None/None	1B	clay openings in chaparral and coastal sage scrub, grasslands/perennial herb/April-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low likelihood of occurrence within study area.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Dudleya cymosa ssp. *marcescens*	marcescent dudleya	FT/CR	1B	chaparral, often on volcanic substrate/perennial herb (geophyte)/ April-June	Not observed during 2003 field season. No CNDDB records exist for Newhall and Val Verde quads. Unidentified *Dudleya cymosa* observed on vertical sandstone cliffs and slopewash in 2002 are actually *D. lanceolata*, a common species. Low likelihood of occurrence within study area.
Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya	FT/None	1B	chaparral and coastal sage scrub, often on volcanic substrate/perennial herb (geophyte)/April-June	Not observed during 2003 field season. No CNDDB records exist for Newhall and Val Verde quads. Unidentified *Dudleya cymosa* observed on vertical sandstone cliffs and slopewash in 2002 are actually *D. lanceolata*, a common species. Low likelihood of occurrence within study area.
Dudleya multicaulis	many-stemmed dudleya	None/None	1B	coastal bluff scrub, coastal sage scrub, valley and foothill grassland, rocky, often clay substrate/perennial herb/ April-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
Dudleya parva	Conejo dudleya	FT/None	1B	coastal sage scrub and grassland on rocky, gravelly clays/perennial herb/May-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
Erodium macrophyllum	round-leaved filaree	None/None	2	cismontane woodland and grasslands on clay substrate/annual herb/March-May	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; however records exist for Simi Valley and this plant was observed in the hills east of Castaic Lake in 2003. Suitable habitat present onsite; moderate likelihood of occurrence in study area.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None	1A	marshes and swamps/perennial herb/ August-October	A *Helianthus* population onsite, discovered in 2002 by Elvin and Sanders at Castaic Spring, on the south side of the Santa Clara River between Middle Canyon and San Jose Flats, was determined to be this species by some experts. The final determination of the identity of this species is still being worked on.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Horkelia cuneata var. *puberula*	mesa horkelia	None/None	1B	chaparral, cismontane woodland, coastal sage scrub on sandy or gravelly substrate/perennial herb/February-December	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low likelihood of occurrence within study area.
Juglans californica	southern California black walnut	None/None	4	chaparral, cismontane woodland, coastal sage scrub, alluvial scrub/ deciduous tree/March-May	Observed in California sagebrush and chaparral onsite.
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	None/None	4	coastal dunes, meadows, seeps, marshes, and swamps/ perennial herb/May-June	Observed in mesic riparian areas onsite.
Malacothamnus davidsonii	Davidson's bush mallow	None/None	1B	chaparral, coastal sage scrub, riparian woodland/ deciduous scrub/June-January	Not observed during 2003 field season. Nearest occurrences are in San Fernando and Sunland. Suitable habitat present onsite. Moderate likelihood of occurrence within study area. Several Malacothamnus specimens were sent off for authoritative determination to ensure that this species does not occur onsite.
Nama stenocarpum	mud nama	None/None	2	edges of lakes, rivers, ponds, vernal pools/annual/January-July	Not observed during 2003 field season. Moderate likelihood of occurrence on banks of Santa Clara River and other mesic areas onsite. No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
Nemophila parviflora var. *quercifolia*	oak-leaved nemophila	None/None	4	cismontane woodland, lower montane coniferous forest/annual herb/may-June	Observed onsite in oak woodland east of Grapevine Mesa.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Scientific Name	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
Nolina cismontana	chaparral nolina	None/None	1B	chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub/May-July	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low likelihood of occurrence within study area.
Opuntia basilaris var. *brachyclada*	short-joint beavertail	None/None	1B	chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June	Not observed during 2003 field season. This plant was identified as onsite by Dudek in 2002; however, recent investigations indicate that the *Opuntia basilaris* plants on Newhall Ranch are not *O. basilaris* var. *brachyclada*, but are *O. basilaris* var. *ramosa*.
Pentachaeta lyonii	Lyon's pentachaeta	FE/SE	1B	openings in chaparral and coastal sage scrub, grasslands/annual herb/March-August	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Simi Valley. Suitable habitat present onsite. Moderate likelihood of occurrence within study area.
Rorippa gambellii	Gambel's watercress	FE/ST	1B	Marsh and swamps (freshwater and brackish)/ perennial herb/April-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
Senecio aphanactis	rayless ragwort	None/None	2	chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Not observed during 2003 field season. Historic CNDDB record for Saugus, south of Santa Clara River. Suitable habitat onsite. Moderate likelihood of occurrence within study area.
Sidalcea neomexicana	salt spring checkerbloom	None/None	2	chaparral, coastal sage scrub, and playas on alkaline substrate/perennial herb/March-June	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; suitable habitat present onsite. Moderate likelihood of occurrence within study area.
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	None/None	2	meadows and seeps/perennial herb/ fertile January-September	Not observed during 2003 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.

TABLE 3
Sensitive Plant Species Observed or Potentially Occurring at Newhall Ranch

Legend

FE:	Federally-listed as endangered	CNPS List 1A:	Plants presumed extinct in California
FT:	Federally-listed as threatened	CNPS List 1B:	Plants rare, threatened, or endangered in California and elsewhere
FC:	Federal candidate for listing	CNPS List 2:	Plants rare, threatened, or endangered in California but more common elsewhere
SC:	State candidate for listing	CNPS List 3:	Plants about which we need more information – a review list
SE:	State-listed as endangered	CNPS List 4:	Plants of limited distribution – a watch list
ST:	State-listed as threatened		
SR:	State-listed as rare		

Figures 4 through *21* depict the locations of sensitive species, including SFVS, on the NR SPA. Labels for each of the polygons in the figures correlate with those in *Tables 4* through *9*, which contain estimates for the numbers of individuals within each polygon. Any additional information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1* through *4.2.10*).

4.2.1 *Calochortus clavatus* var. *gracilis* (slender mariposa lily)

Slender mariposa lily has no state or federal status but is a CNPS List 1B plant. It is typically found in chaparral, coastal sage scrub, and grasslands, often on clay, and/or rocky soils. It has been documented to occur at the mouth of Pico Canyon and other canyons in the vicinity (Newhall Quad; CNDDB 2002). Other varieties of this species documented from southern California include: club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*) and pale mariposa lily (*C. clavatus* var. *pallidus*). The club-haired mariposa lily differs in that it is virtually a serpentine endemic (restricted to serpentine soils) and a very robust species, generally attaining a height of one meter. Pale mariposa lily differs in that the petals are a paler yellow, the anthers are paler (yellow to pale purple), and the hairs on the petals are not as knobby or club shaped. Neither the club-haired mariposa lily nor pale mariposa have a prominent red line above the nectary on the petal, as is the case with the slender mariposa lily.

Multiple polygons of mariposa lily were mapped within the study area by drawing boundaries on aerial photograph field maps around the areas that contained the mariposa lily. Surveys within the study area were conducted after the blooming season for the slender mariposa lily. Surveys on the site were conducted while slender mariposa lily plants were in fruit; estimates of the number of fruiting individuals (not flowering or vegetative) were made based on visual estimations. The fruiting individuals were much more cryptic than the flowering plants; therefore, it is expected that only a portion of the plants that were in flower earlier were observed. It is not possible to estimate what portion was observed. Moreover, geophytes like *Calochortus* generally only have a percentage of the plants flower in any given year and the non-flowering individuals are generally not as visible.

Within the NR SPA study area, the slender mariposa lily was found primarily on east, northeast, and southwest-facing ridges and slopes in California sagebrush, California buckwheat and grasslands (*Figures 4* through *21*). The plants were generally mapped in

1527

534

528

1529

1531

21474

1126

532

slender mariposa lily - *Calochortus clavatus var. gracilis*

N

250 0 Feet

OPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

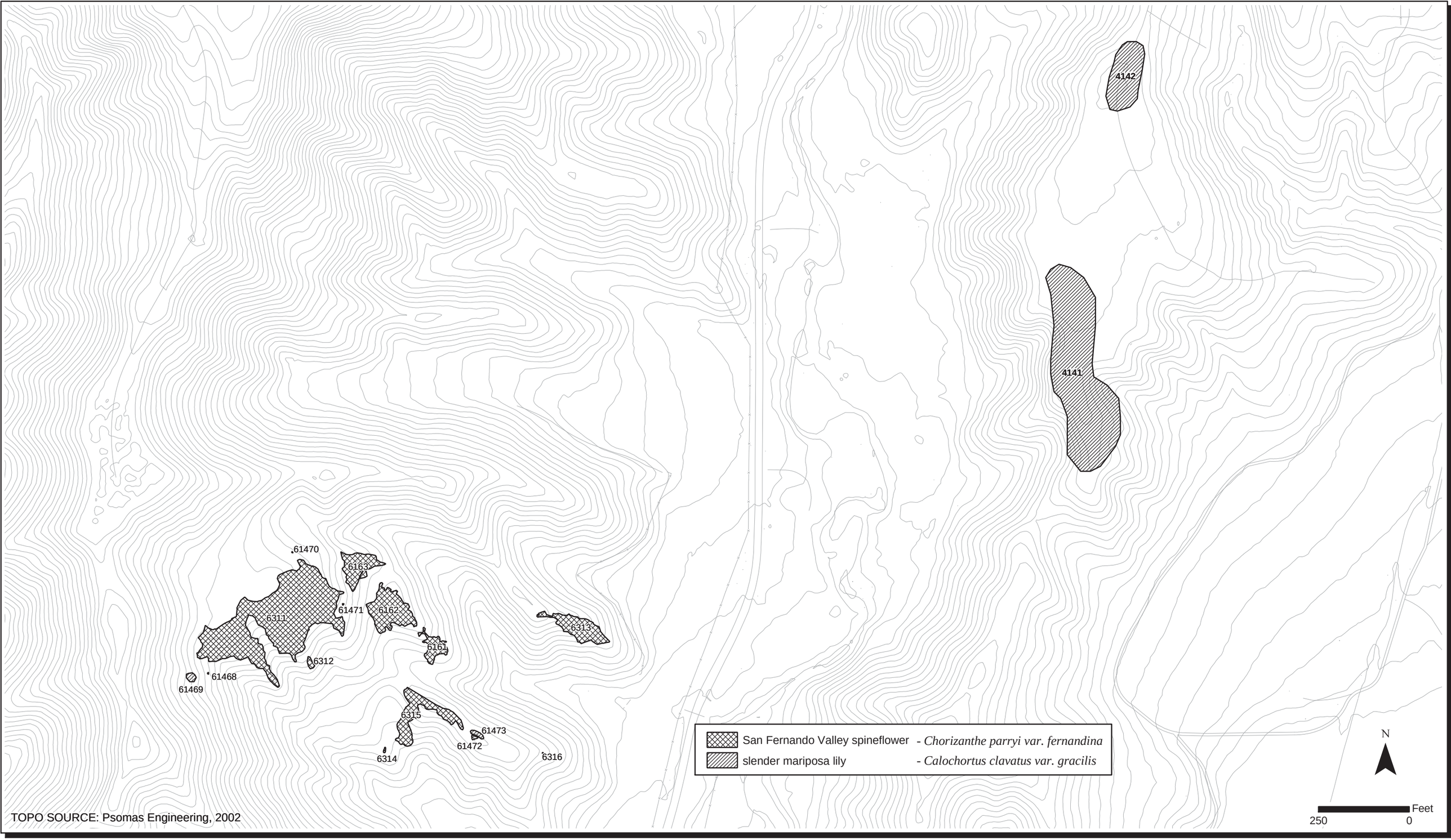
FIGURE 4

OPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 5



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 6

7355

7356

7351

slender mariposa lily - *Calochortus clavatus var. gracilis*

N

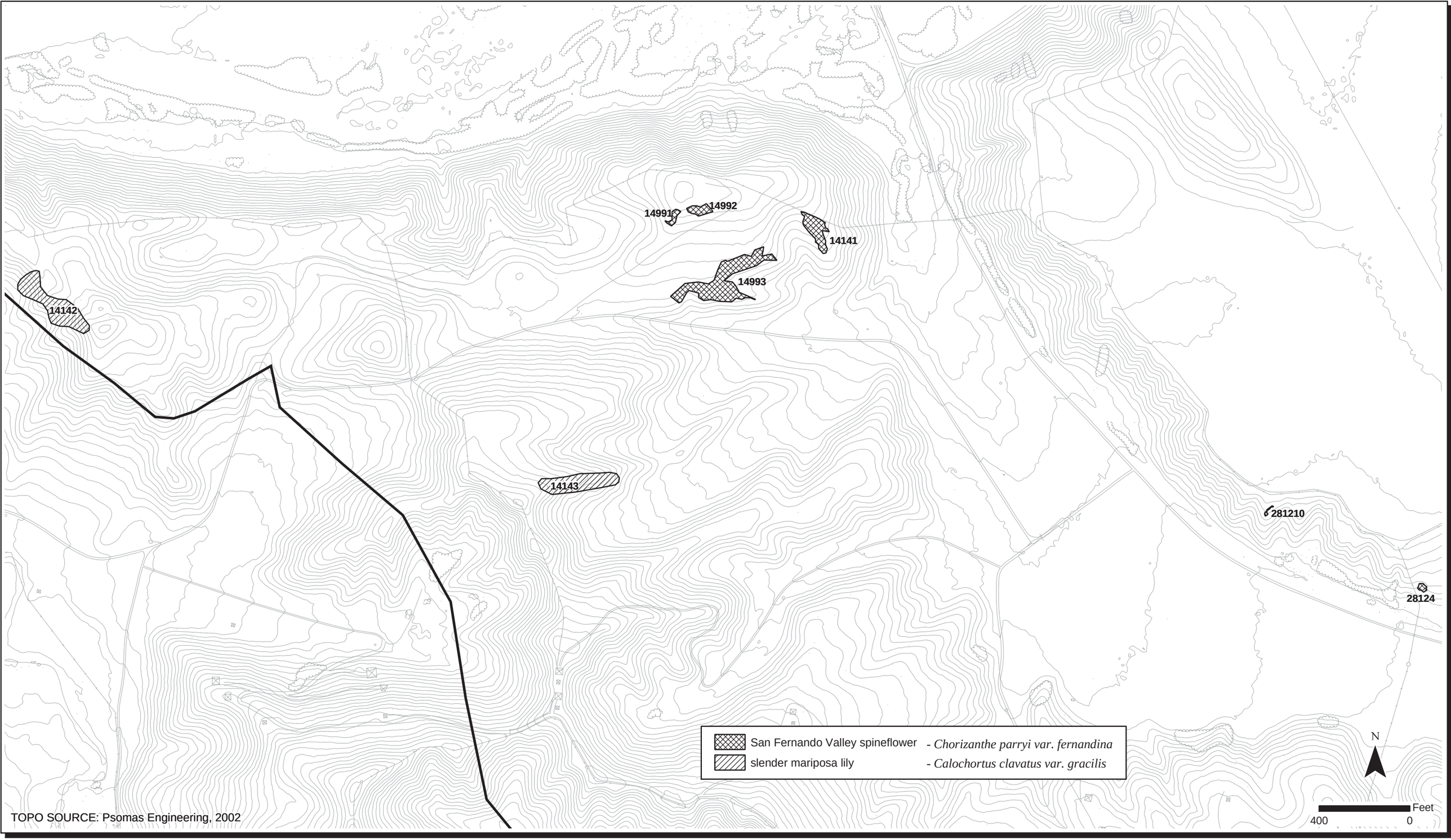
200 0 Feet

TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

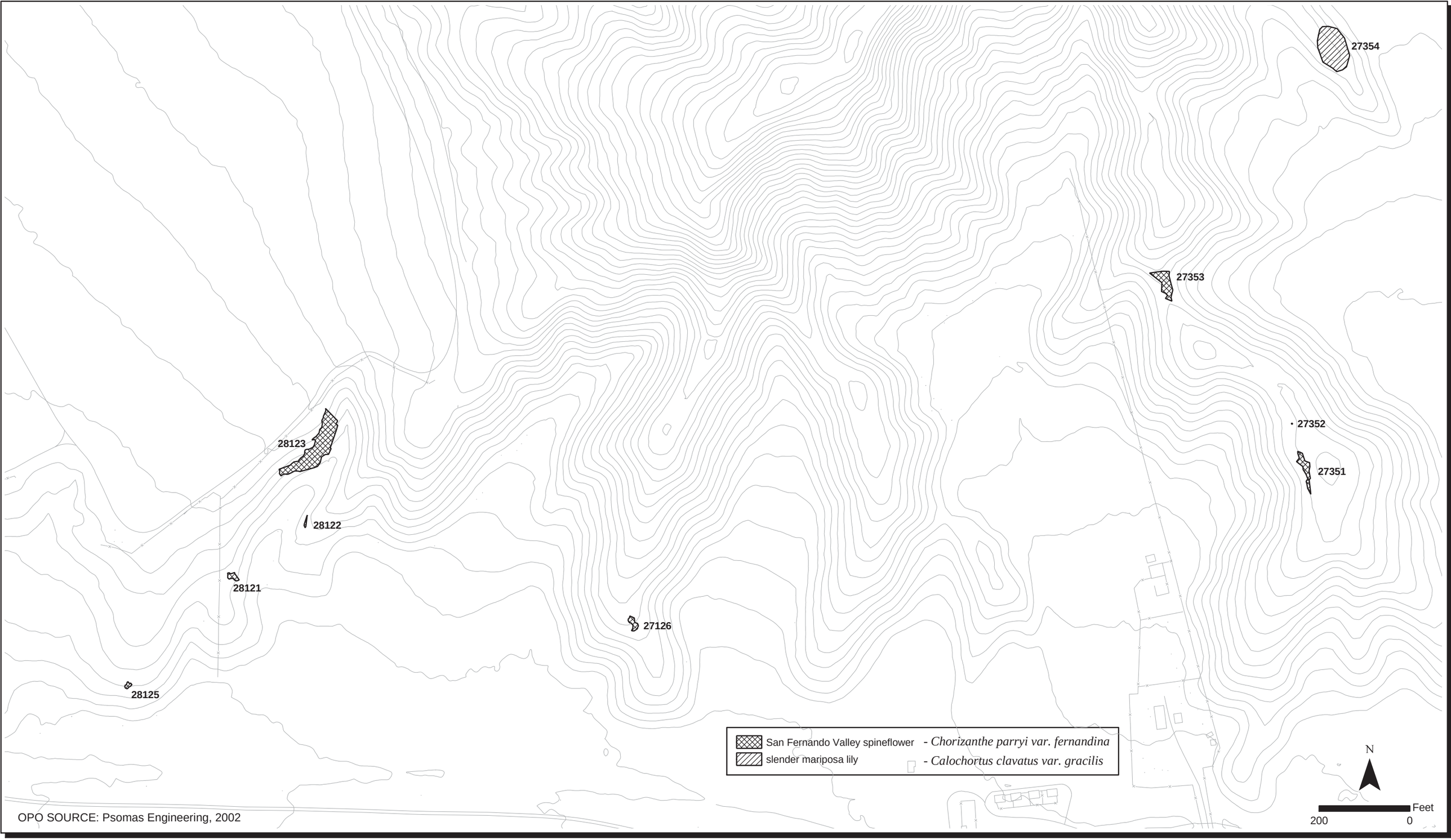
FIGURE 7



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 8

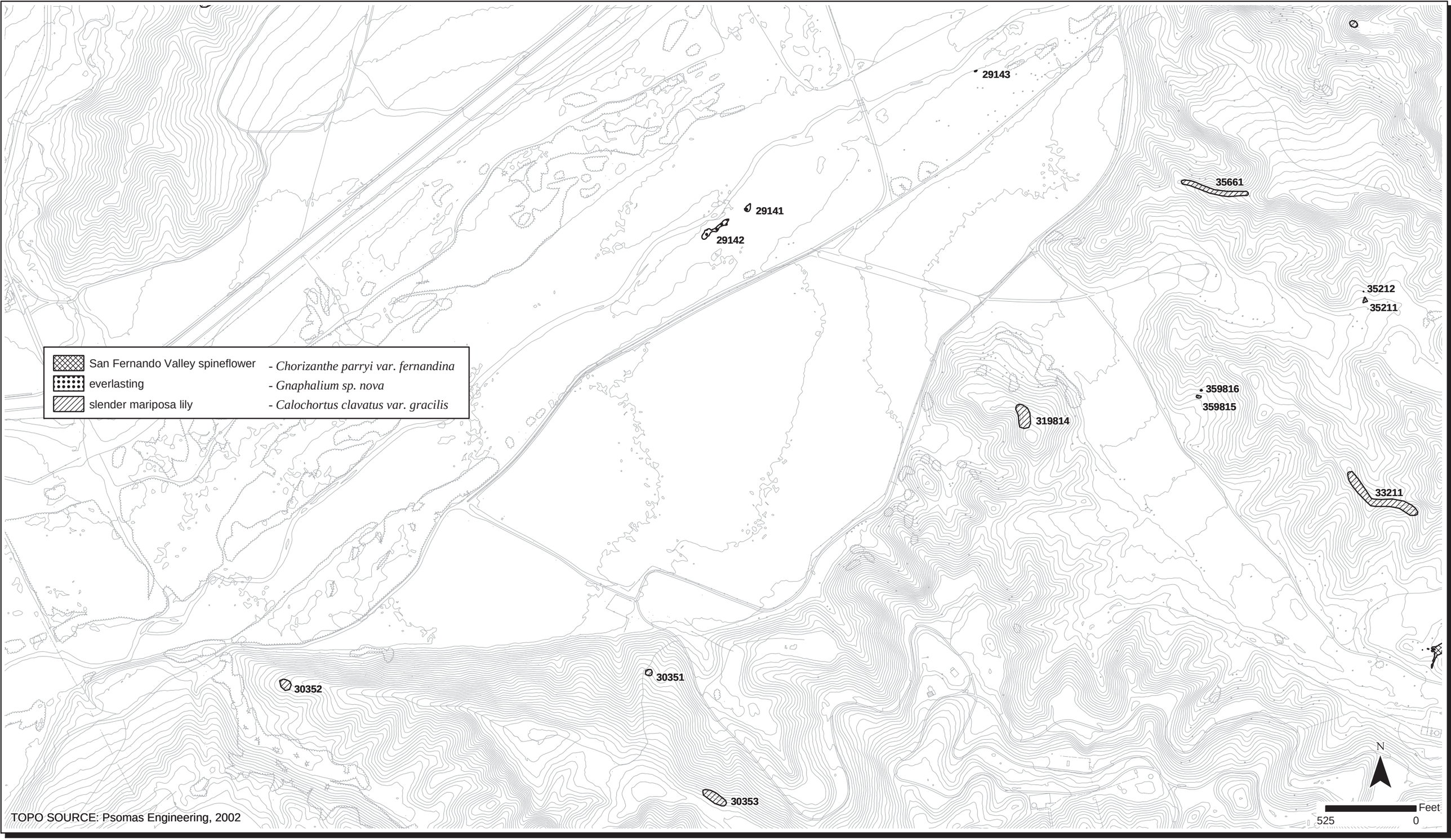


OPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

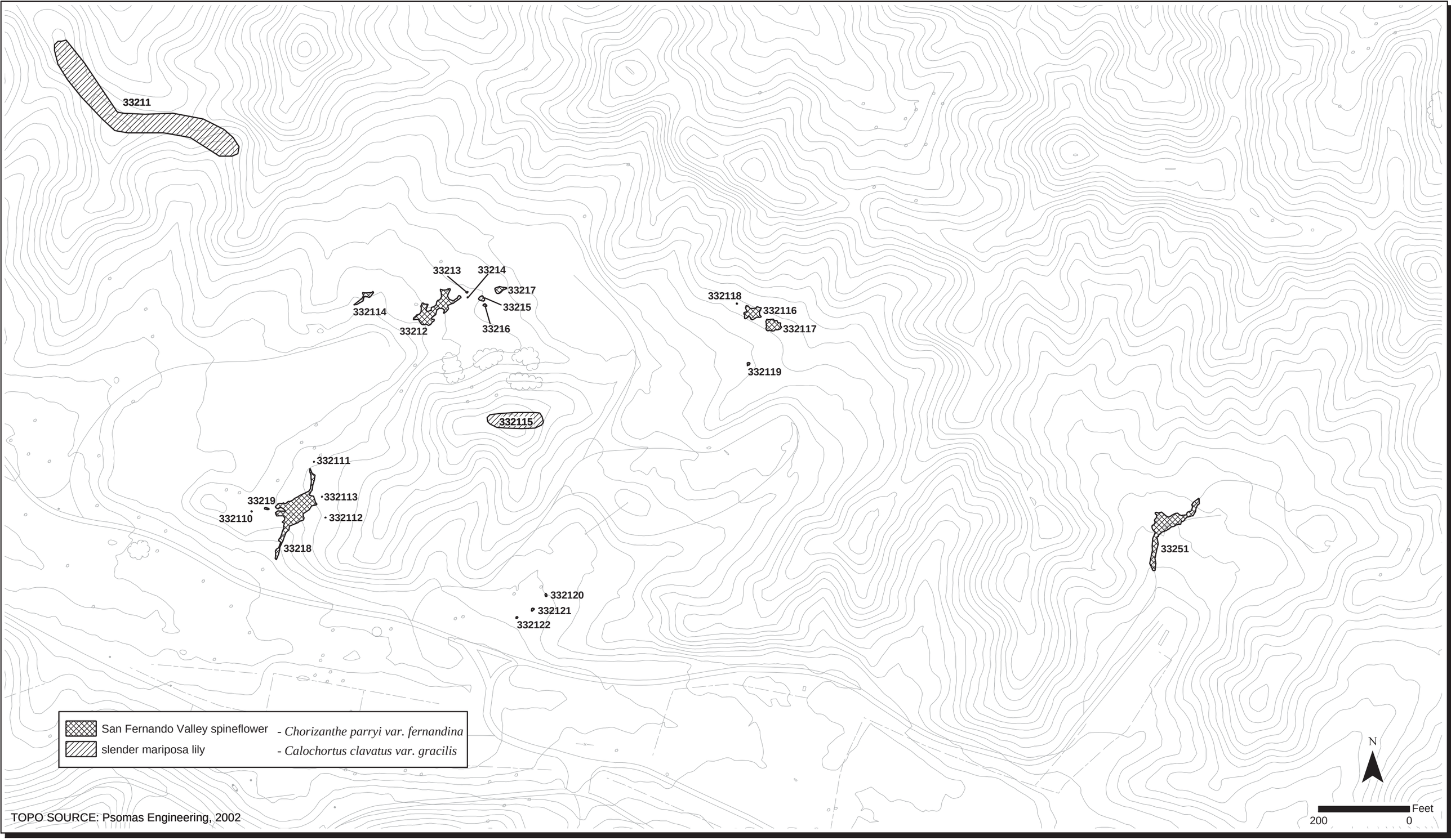
FIGURE 9



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

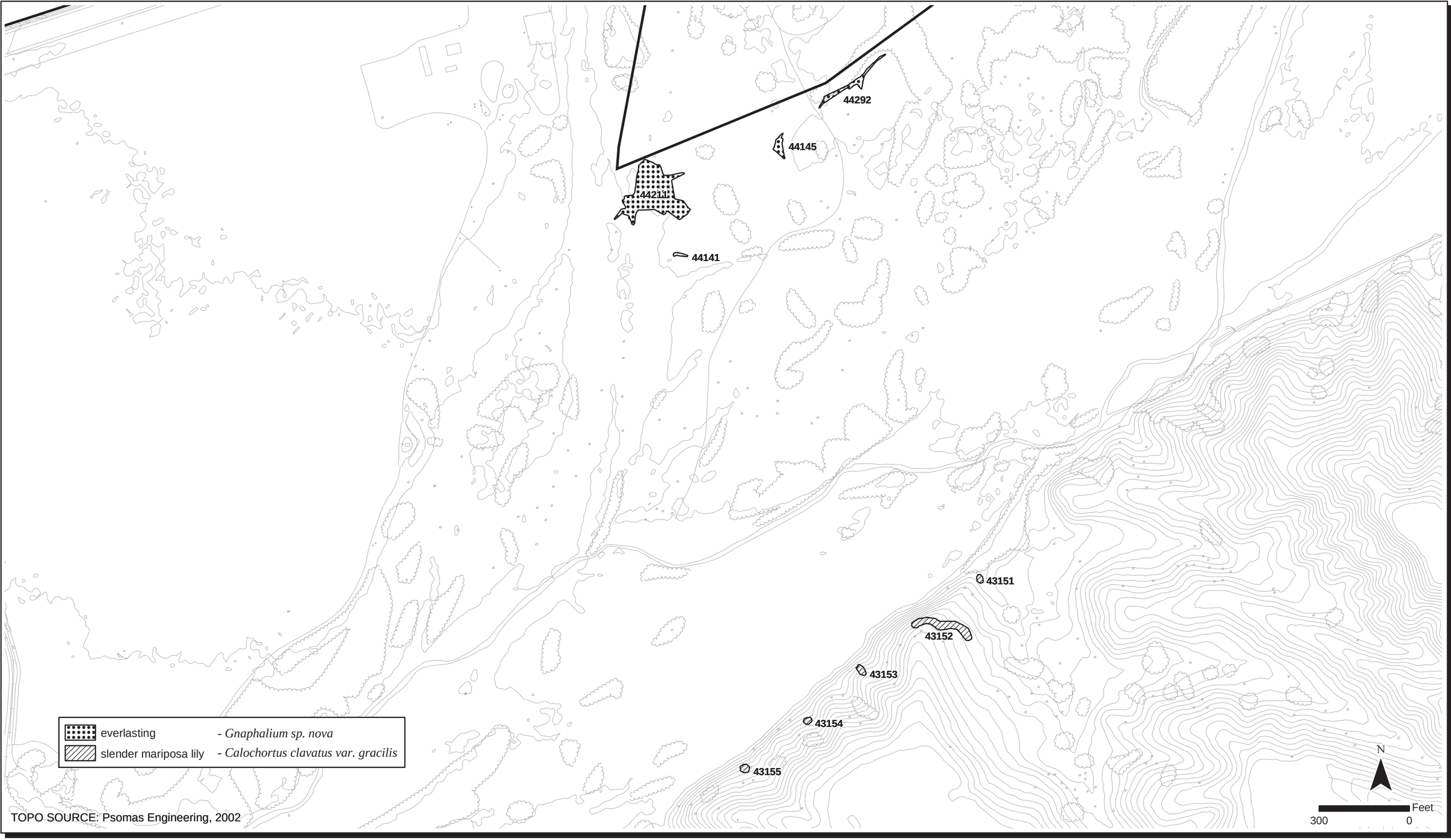
FIGURE 10



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

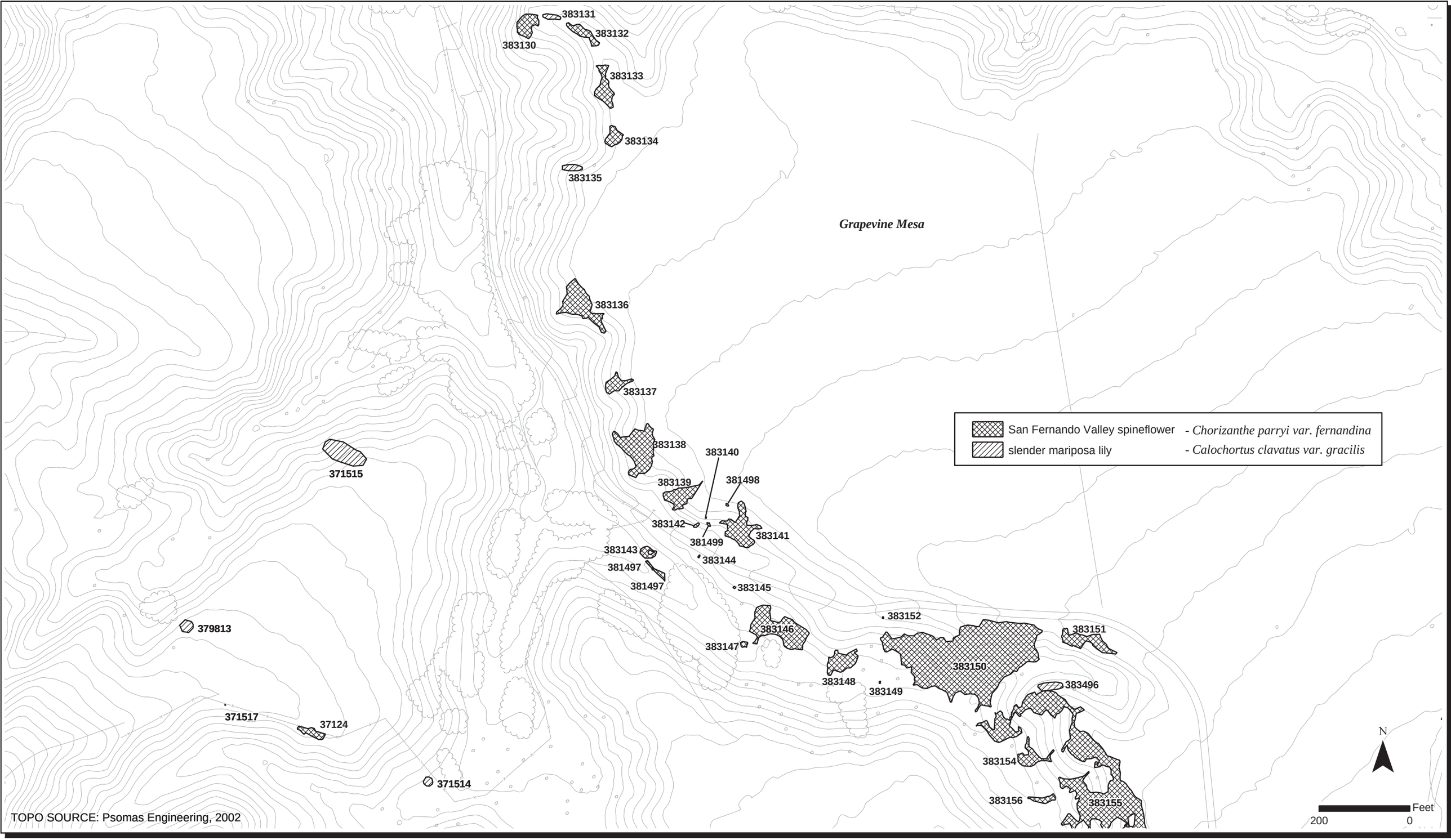
FIGURE 11



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

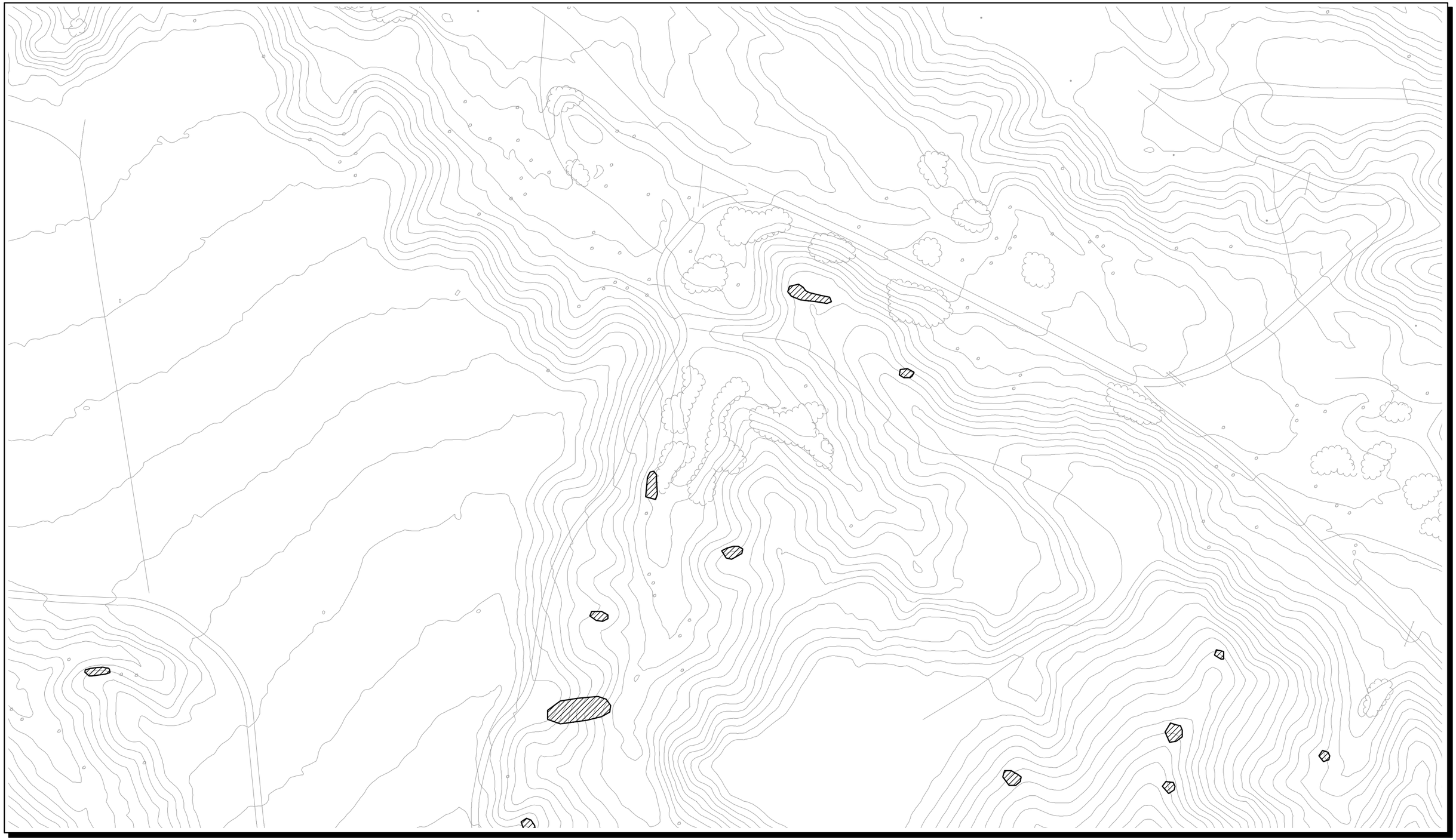
FIGURE 12



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

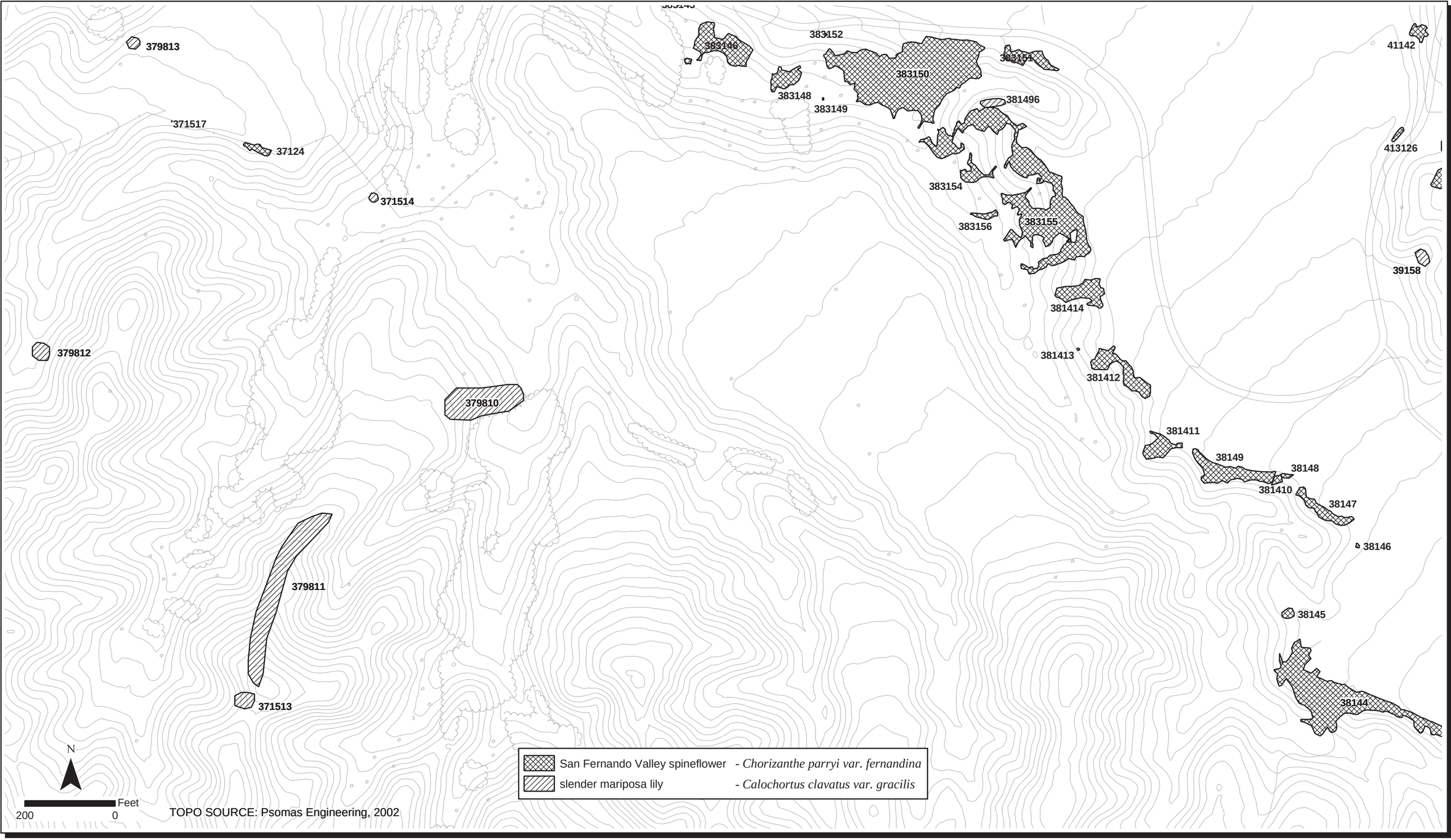
FIGURE 13



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 14



Newhall Ranch/San Martinez Grande

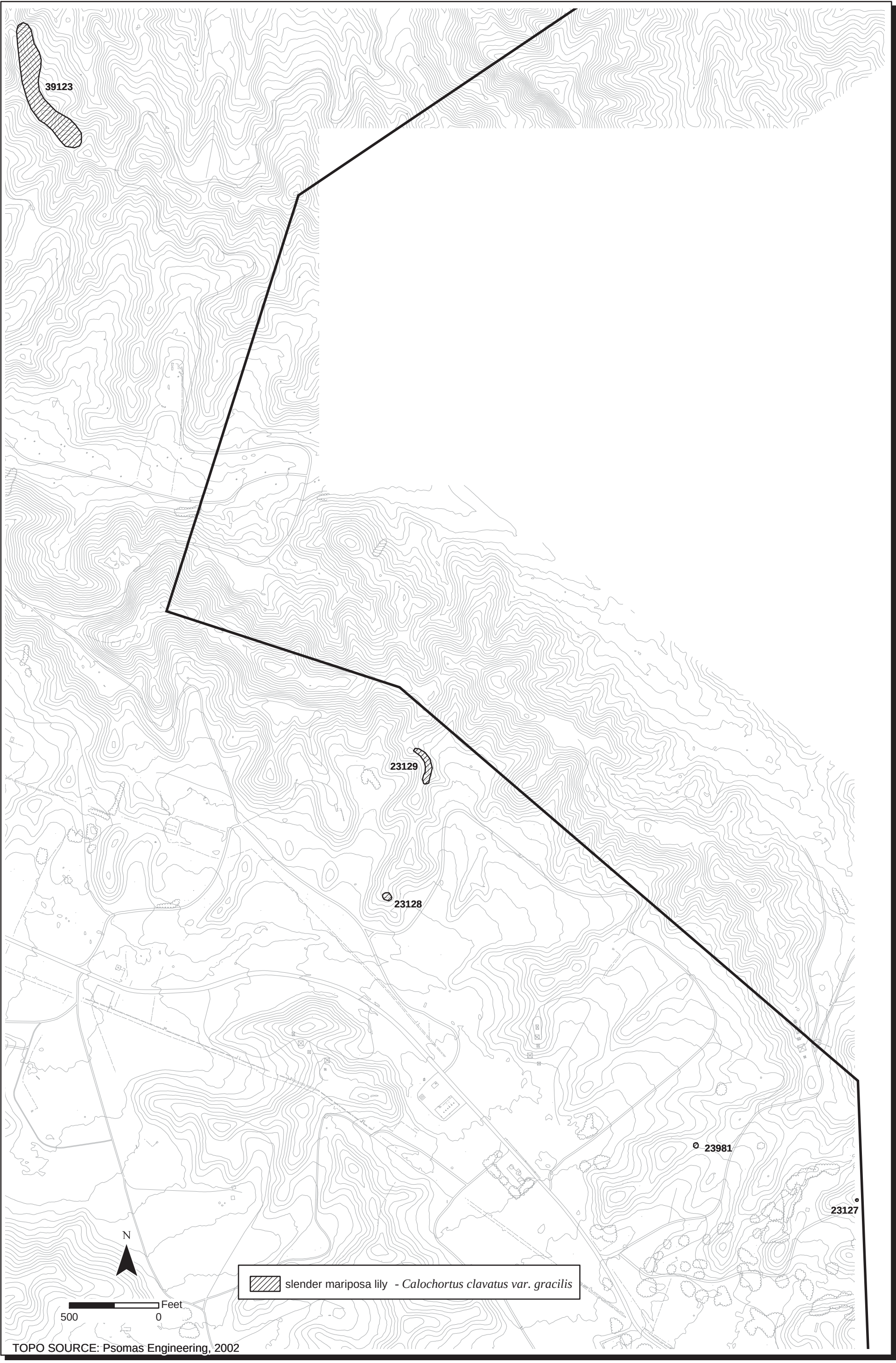
2003 Rare Plant Survey Results

FIGURE 15

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

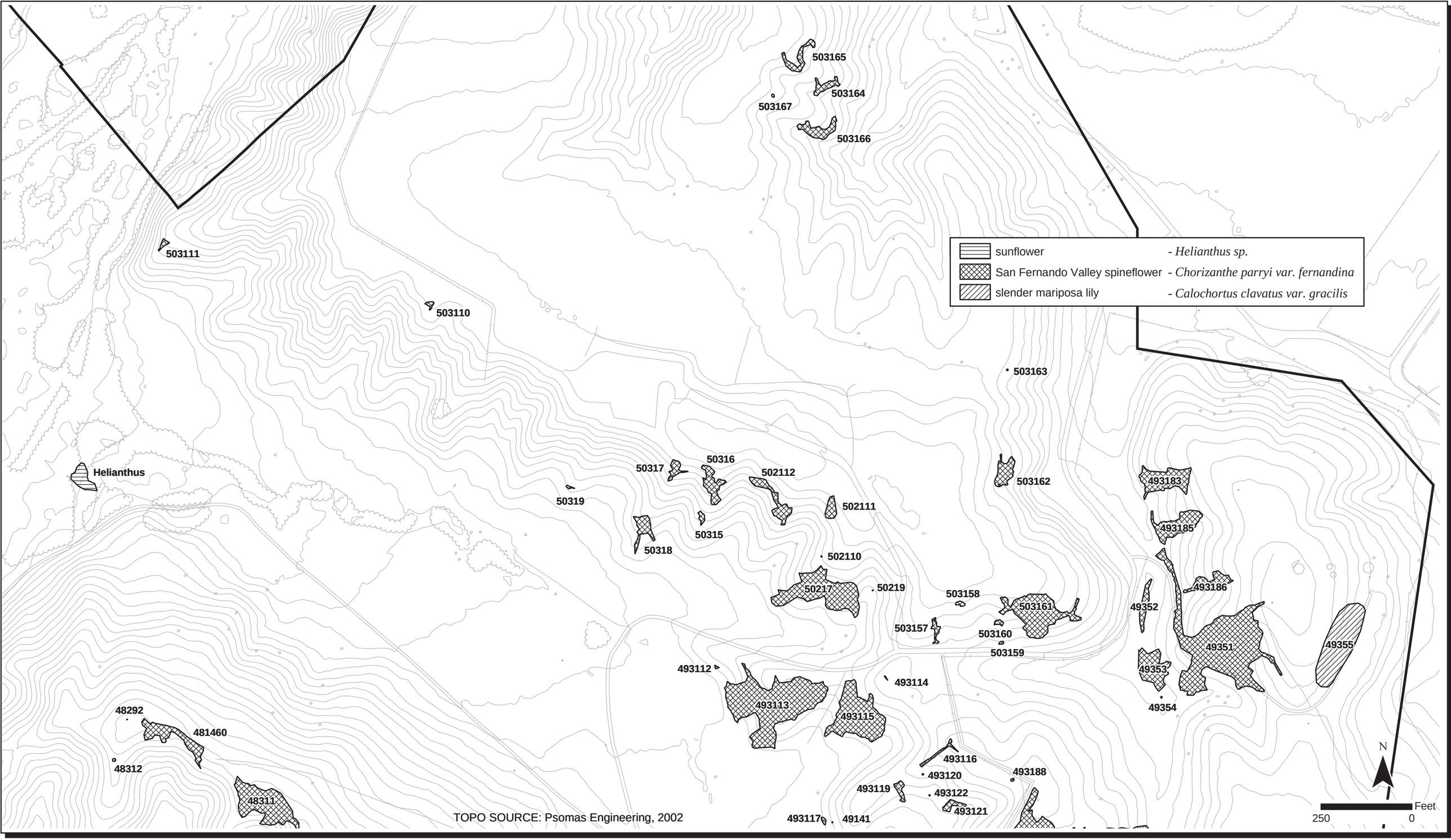
FIGURE 16



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

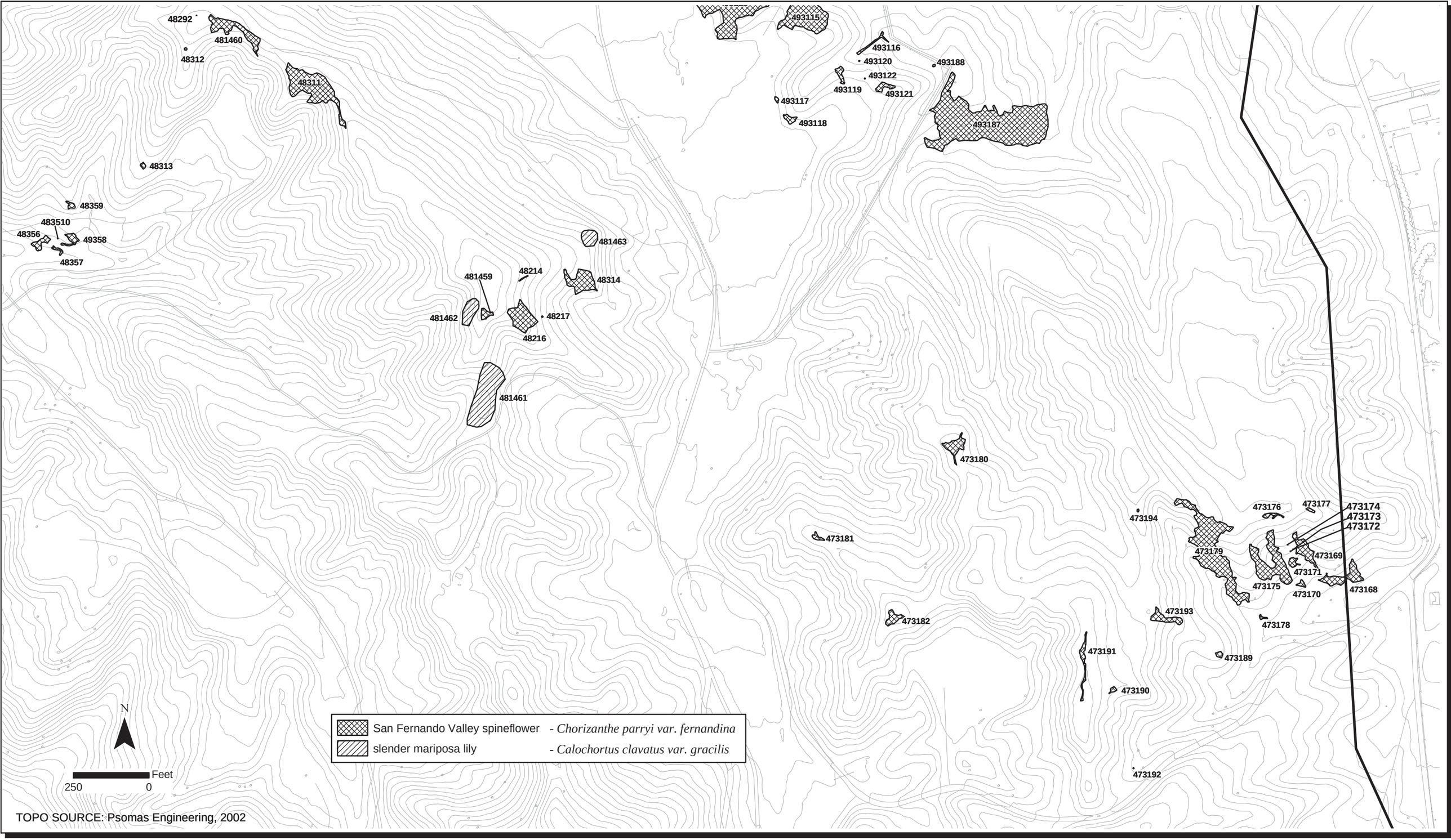
FIGURE 17



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

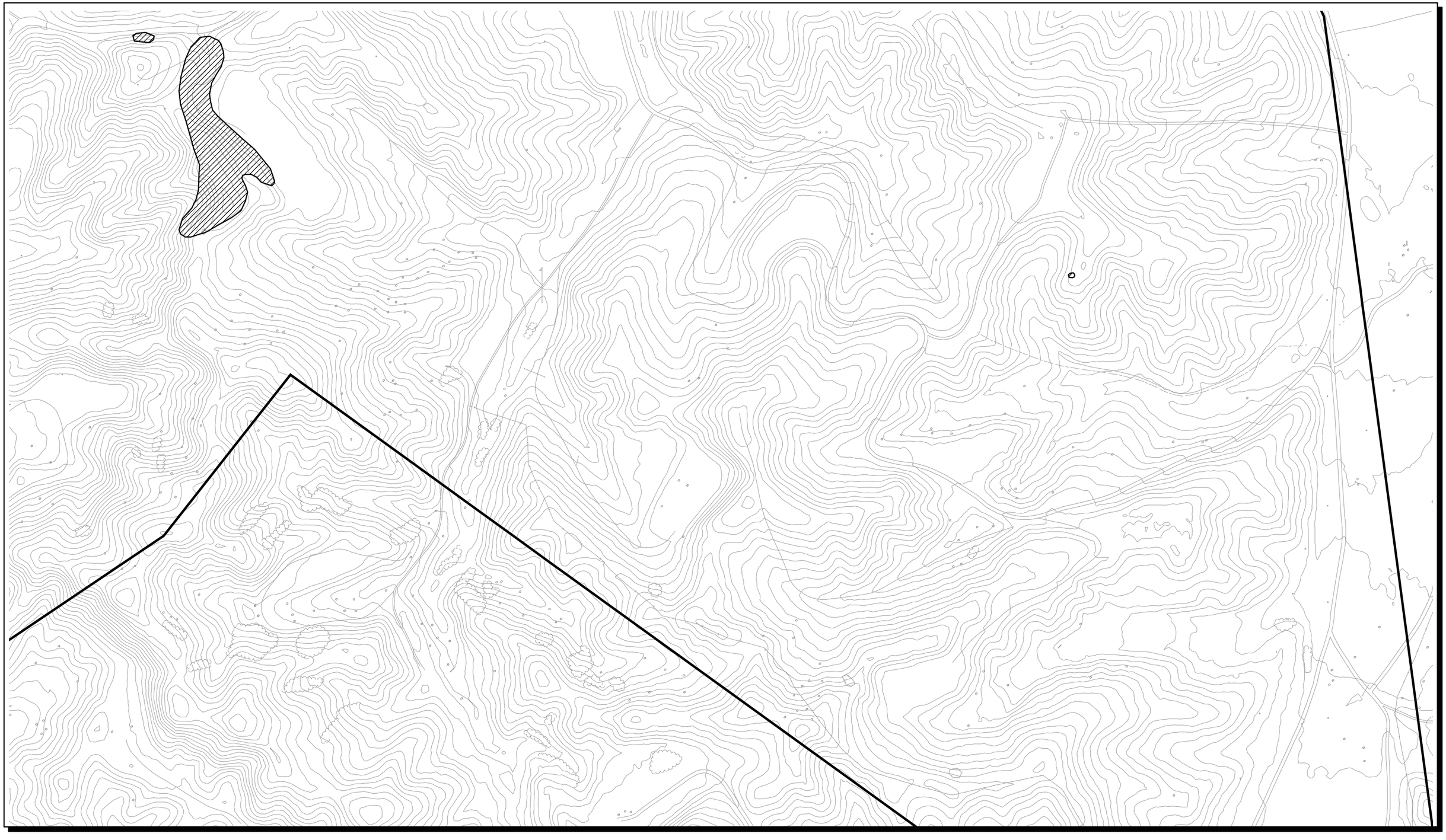
FIGURE 18



Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 19



Newhall Ranch and San Martinez Grande

2003 Rare Plant Survey Results

FIGURE 20

21141

slender mariposa lily - *Calochortus clavatus var. gracilis*

N

Feet
500 0

TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Rare Plant Survey Results

FIGURE
21

areas of high vegetative cover and a variety of soil types (*e.g.,* gravelly loam, sandy loam, rocky clay). A total of 79 polygons were mapped with a polygon size ranging from 183 to 96,259 square feet. The estimated number of individuals within each polygon ranges from 1 to over 500, with a total of approximately 2,750 individuals observed within the project site during the 2003 field season (see *Table 4*). CNDDB forms for each occurrence on this site and are included in *Appendix C*.

TABLE 4
Slender Mariposa Lily Summary of Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
14142	30314	25
14143	23099	50
16141	41787	250
21141	49501	500
23127	183	10
23128	1736	5
23129	7637	100
23981	621	4
27354	5127	8
30351	1145	1
30352	3115	6
30353	6773	5
319814	8769	3
33211	22189	100
332115	3802	30
35661	10952	100
371513	1322	4
371514	315	1
371515	3391	4
379810	10295	12
379811	15800	6
379812	1267	10
379813	585	1
381496	812	25
383131	364	100
383135	516	10
39123	77166	300
39151	734	1
39981	939	13
39982	787	1
39983	6638	16
39984	972	3
39158	785	4
41152	476	3
41153	1164	15
41154	295	2

TABLE 4
Slender Mariposa Lily Summary of Occurrence Data for the Newhall Ranch SPA

Polygon Name	Polygon area (sq. ft.)	Estimated Number of Individuals
41155	381	3
41156	1365	7
41157	654	4
41159	6132	45
411512	494	2
41161	672	9
41163	890	4
41985	818	2
41986	715	2
41987	1263	5
41989	1945	16
42121	1816	4
42122	96259	300
43151	486	5
43152	5390	20
43153	728	5
43154	491	3
43155	686	2
463196	266	5
481461	15052	50
481462	3202	50
481463	2400	10
49355	16375	30
11126	367	5
11527	3166	20
11528	476	5
11529 (includes 11530)	4925	38
11532	258	1
11533(includes 11531)	1949	5
11534	2466	12
21474	37930	100
3311	2418	5
3312	2359	30
3313	2023	10
3314	2860	40
4141	68761	20
4142	14508	10
61469	503	3
61473	417	10
7351	32232	100
7355	2333	11
7356	865	8
379814	1332	3
Total	**682,001**	**2,747**

4.2.2 *Calystegia peirsonii* (Peirson's morning glory)

Peirson's morning-glory has no state or federal status, but is found on List 4 of the CNPS *Inventory*. This morning-glory is rhizomatous perennial that typically is found in more desert-like areas (*e.g.*, creosote bush scrub, Joshua tree woodland) at elevations which exceed 3,000 feet AMSL, although there are records in the CNDDB for lower elevations in the local area. It was RECON's opinion (1996) that chaparral morning-glory (*Calystegia macrostegia* ssp. *cyclostegia*) was the more common species; however, after reviewing the floral bracts, leaf shape, and its glabrous nature, it is Dudek's opinion that the morning-glory observed in the study area is Peirson's morning-glory. This species was also recorded onsite during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993).

While never abundant, Peirson's morning-glory is widespread onsite and was observed on virtually all ridges and slopes, weakly climbing over mixed chaparral, California sagebrush, California buckwheat, and in grasslands throughout the study area. CNDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.3 *Cercocarpus betuloides* var. *blancheae* (island mountain-mahogany)

Island mountain-mahogany has no state or federal status, but is found on List 4 of the CNPS *Inventory*. It is an evergreen shrub that occurs as part of the chaparral in Los Angeles and Ventura counties, as well as on several of the Channel Islands (CNPS 2001). This species was not observed during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996).

Onsite, island mountain-mahogany occurs as an occasional component of chaparral at the base of north-facing slopes. CNDDB forms were not completed for this species because of the relatively low sensitivity of this species.

4.2.4 *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower)

San Fernando Valley spineflower is state-listed as endangered, a candidate for federal listing, and found on List 1B of the CNPS *Inventory*. Until its rediscovery in 1999 at

Laskey Mesa on Ahmanson Ranch in Ventura County, it was thought to be extinct. A review of information of historic occurrence of SFVS in the CNDDB indicate that it was previously thought to occur in sandy to gravelly soils of washes, riverbeds, and upland areas primarily on the margins of the San Fernando Valley at the base of the Santa Susana Mountains, San Gabriel Mountains, and the Simi Hills. Munz (1974) provides distribution information to include Orange and San Diego counties. SFVS was not observed onsite during limited focused surveys for sensitive plant species conducted in 1992 (Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996).

SFVS polygons were identified in several general locations of the study area for the Newhall Ranch Specific Plan including areas around Airport Mesa (including Dead-End Canyon), Grapevine Mesa (including Lion Canyon and Long Canyon), Potrero Canyon, and San Martinez Canyon. The polygons for these occurrences are depicted in *Figures 6* through *20*. Labels for each of the polygons in these figures correlate with those in *Table 5* through *10*, which contains estimates for the numbers of individuals within each polygon.

Most of the SFVS were found on slopes with a south-facing component in habitat that was either open California sagebrush or California buckwheat, ecotone between California sagebrush or California buckwheat and grasslands, or at the edge of agricultural fields on mesas. Most of the observed SFVS were found on soils mapped by the USDA (1969) as slightly eroded to eroded Castaic-Balcom silty clay loam (30-50 percent slopes) or Terrace Escarpments. Plants in the vicinities of Grapevine and Airport mesas were observed down slope of terrace surfaces capped by Zamora clay loam (2-9 percent slopes). Elevations at SFVS locations onsite range from approximately 1,000 to 1,300 feet AMSL.

Vegetative cover in the area of SFVS occurrences ranged from five to 100 percent, but was more commonly between 60 and 80 percent. The soil type for all mapped SFVS occurrences on the project site consisted of sandy loams.

A total of 193 SFVS polygons were mapped ranging in size from one (1) to 55,943 square feet. The number of individuals within each polygon ranges from one (1) to approximately 1,000,000. At Airport Mesa there were an estimated 1,114,559 individuals in 86 polygons (*Table 5*). At Grapevine Mesa there were an estimated 1,871,598 individuals in 55 polygons (*Table 6*). At Potrero Canyon there were 232,503 individuals in 14 polygons (*Table 7*) and at San Martinez Grande Canyon there were 1,124,388 individuals in 13 different polygons (*Table 8*). The entire Newhall Ranch SPA contained

an estimated 4,594,610 SFVS individuals for the 2003 field season (*Table 9*). CNDDB forms are included in *Appendix C* for each of the four occurrences onsite.

TABLE 5
San Fernando Valley Spineflower
Summary of Occurrence Data for the Airport Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
463197	7516	35,000
463198	1012	2,000
463199	29	50
4631100	36	1
473168	4064	5,000
473169	3248	7,500
473170	352	300
473171	669	200
473172	4	1
473173	3	1
473174	2	1
473175	9632	20,000
473176	563	15
473177	224	15
473178	168	50
473179	21145	50,000
473180	2526	7,500
473181	459	500
473182	1453	2,000
473189	335	500
473190	281	300
473191	1413	4,000
473192	2	1
473193	2155	5,000
473194	45	10
61149	600	200
481459	864	1,000
481460	5458	20,000
48214	84	4
48216 (includes 48215)	5487	40,000
48217	17	2
48292	2	1
48311	12871	50,000
48312	9	20
48313	234	500
48314	5055	25,000
48356	1210	750
48357	310	750
48358	1065	1,000

TABLE 5
San Fernando Valley Spineflower
Summary of Occurrence Data for the Airport Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
48359	400	50
483510	6	1
49141	7	3
493112	57	5
493113	29395	20,000
493114	22	3
493115	14747	10,000
493116	670	50
493117	167	30
493118	694	200
493119	829	200
493120	11	2
493121	941	200
493122	9	1
493183 (includes 493184)	7166	2,600
493185	6018	5,000
493186	3404	5,000
493187	47106	100,000
493188	54	25
49351	38873	500,000
49352	1894	30
49353	6298	800
49354	12	10
50217	15059	100,000
50218	1	1
50219	13	15
502110	7	6
502111	1379	40
502112	3386	3,000
50315	385	500
50316	3014	25,000
50317	1115	1,000
50318	2264	1,000
50319	90	200
503110	257	300
503111	335	400
503157	704	2,000
503158	238	300
503159	80	100
503160	262	300
503161	12678	30,000
503162	2774	20,000

TABLE 5
San Fernando Valley Spineflower
Summary of Occurrence Data for the Airport Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimated Number of Individuals
503163	15	5
503164	1423	2,000
503165	1983	1,000
503166	2752	4,000
503167	46	10
Totals	**299,639**	**1,114,559**

TABLE 6
San Fernando Valley Spineflower
Summary of Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimate # Individuals
33251	3383	5,000
33212	2482	105,000
33213	10	10
33214	4	1
33215	104	1,500
33216	33	100
33217	236	300
33218	4382	120,000
33219	33	20
332110	4	2
332111	3	1
332112	3	1
332113	3	2
332114	296	500
332116	760	5,000
332117	688	12,900
332118	5	10
332119	30	200
332120	22	10
332121	27	60
332122	13	5
35211	454	200
35212	10	10
359815	353	600
359816	78	130
37124	809	400
371517	1	1
38141	126	50

TABLE 6
San Fernando Valley Spineflower
Summary of Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimate # Individuals
38142	809	100
38143	434	8,000
38144	25023	700,000
38145	476	500
38146	59	50
38147	2547	70,000
38148	193	400
38149	5465	100,000
381410	328	50
381411	2494	80,000
381412	4458	100,000
381413	21	20
381414	3923	10,000
381498	22	20
381499	36	20
383130	1753	3,000
383132	1209	4,000
383133	2029	5,000
383134	336	1,500
383136	5675	10,000
383137	1251	2,000
383138	5775	75,000
383139	2282	4,000
383140	6	1
383141	3546	2,000
383142	68	25
383143 (includes 381497)	588	3,000
383144	15	2
383145	17	40
383146	6315	10,000
383147	155	300
383148	2305	5,000
383149	13	2
383150	37842	355,000
383151	2638	3,000
383152	9	1
383154	1622	2,000
383155 (includes 383153)	29348	281,000
383156	593	1,000
393123	869	500

TABLE 6
San Fernando Valley Spineflower
Summary of Occurrence Data for the Grapevine Mesa Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimate # Individuals
393124	150	50
393125	63	40
41142	964	15,000
41143	484	1,000
413126	319	200
413127	99	100
413128 iincludes 411413, 411414, and 411415)	3495	10,000
413129	674	2,000
41988	1780	1,200
433515	2112	3,000
433516	26	1
433517	24	25
Totals	**177,088**	**2,123,160**

TABLE 7
San Fernando Valley Spineflower Summary of Occurrence Data for the Potrero Canyon Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimate # Individuals
14141	9979	40,000
14991	1782	7,500
14992	3640	25,000
14993	35240	150,000
27126	359	250
27351	928	200
27352	3	1
27353	1449	1,000
28121	274	800
28122	65	2
28123	5664	5,000
28124	1041	2,500
28125	130	50
281210	304	200
Totals	**60,859**	**232,503**

TABLE 8
San Fernando Valley Spineflower Summary of Occurrence Data for the San Martinez Grande Canyon Vicinity

Polygon Name	Polygon Area (sq. ft.)	Estimate # Individuals
61468	10	2
61470	7	1
61471	12	4
61472	136	15
6161	3172	2,000
6162	10052	20,000
6163	6093	2,050
6311	55943	1,000,000
6312	398	300
6313	7132	50,000
6314	62	15
6315	8457	50,000
6316	6	1
Totals	**91,481**	**1,124,388**

TABLE 9
San Fernando Valley Spineflower Summary of Occurrence Data for the Newhall Ranch SPA

Polygon Name	Estimate # Individuals
Airport Mesa	1,114,559
Grapevine Mesa	2,123,160
Potrero Canyon	232,503
San Martinez Grande Canyon	1,124,388
Totals for the Newhall Ranch SPA	**4,594,610**

4.2.5 *Dudleya cymosa* (dudleya)

An unidentifiable species of *Dudleya* was found at numerous locations within the study area in 2002 (Dudek 2002). The specimens were preliminarily determined to be an unidentifiable subspecies of *Dudleya cymosa* (which has multiple subspecies that are sensitive, some of which are state- and/or federally- listed). All but one of the locations were checked during the 2003 field season and the plants were determined to be *Dudleya lanceolata* based on their inflorescences. No *Dudleya cymosa* plants were observed and this species is not considered to occur on this project site.

4.2.6 *Gnaphalium sp. nova* (everlasting)

An undescribed species of *Gnaphalium* was documented within the study area during the 2003 field season. Plants of this unnamed everlasting were previously ascribed to the species *Gnaphalium leucocephalum*, which does not occur in California. Specimens of *Gnaphalium leucocephalum* within California are actually this undescribed taxon. Collections of this plant have been made in Riverside, Los Angeles, and San Diego counties (Andy Sanders, pers. comm., 2003). The *Gnaphalium* plants on the Newhall Ranch SPA differ from *Gnaphalium leucocephalum* in stature, pubescence, and phyllary characters. The California *Gnaphalium* plants have been collected relatively few times (perhaps less than 20, without having yet made an exhaustive search of the herbaria) and most collections are old. Many are from around 1900 from somewhat vague localities like "Hollywood" and "Pasadena" but which are in areas that have now been substantially urbanized. Modern collections, outside of the Castaic Mesas and Santa Clara River plants, have come mostly from the Santa Ana Mountains region and especially Temescal Wash, in western Riverside County with at least one collection from adjacent San Diego County. The California plants are almost always associated with alluvial soils, often being found on the benches along major washes. The two occurrences on the Newhall Ranch SPA (*Figures 10* and *12*) consist of approximately 600 individuals and are growing on secondary alluvial benches. The vegetation around these plants consists of open alluvial sage scrub habitats that are sparsely vegetated. CNDDB forms were completed for these occurrences and are included in Appendix C.

4.2.7 *Helianthus nuttallii* ssp. *parishii* (Los Angeles sunflower)

The Los Angeles sunflower was last seen in 1937 and had been thought to be extinct since that time (CNPS 2001). It is currently a CNPS list 1A plant with no state or federal status.

Historic information indicates that this sunflower was only known to occur at five locations in Los Angeles, Orange, and San Bernardino counties (CNPS 2001, CNDDB 2002, and RSA). Los Angeles sunflower is considered to have been extirpated from each of these sites. On June 25, 2002, Dudek botanist Mark A. Elvin, accompanied by Andrew C. Sanders (UCR), discovered vegetative plants growing in a seep area south of the Santa Clara River between Middle Canyon and San Jose Flats (see *Figure 18*). Periodic checks were conducted during the 2002 season to obtain flowers, which are necessary to confirm the identity of this taxon. Once the plants began to flower in the last week of August 2002, Elvin and Sanders identified the plants as Los Angeles sunflower. Specimens were collected independently by a representative of The Newhall Ranch Land and Farming Company and sent to the Herbarium at the University of California, Berkeley, where they were subsequently determined to be consistent with the taxon known as the Los Angeles sunflower by Dr. John Strother (Barbara Errter, memo to Ken Koch; September 12, 2002). These specimens, along with others, were then sent to Drs. Loren Rieseberg and Charles Heiser at the University of Indiana, Bloomington and were identified as *Helianthus nuttallii ssp. nuttallii*. A study was performed by Rancho Santa Ana Botanic Garden (2003) to determine the chromosome number for these plants. The results indicate that *Helianthus* plants at Newhall have a chromosome number of n=34. This differs from the reported results for both *H. nuttallii* ssp. *nuttallii* (n=17) and *H. californicus* (n=51). While this is not conclusive evidence, these data seem to indicate that the *Helianthus* plants at Newhall are either *H. nuttallii* ssp. *parishii* or an undescribed subspecies of *H. nuttallii* according to Loren Rieseberg at the University of Illinois (pers. comm., 2003).

The population of *Helianthus* occurs on the edge of a slight rise in the middle of a one-acre spring/marsh complex ("Castaic Spring") that drains into the south side of the Santa Clara River just upstream of its confluence with Castaic Creek. This rhizomatous perennial grows to a height of up to sixteen to twenty feet and there appears to be three to five clumps of this plant. The sunflower inflorescences are taller than the adjacent vegetation and remain in the sun throughout most of the day. Within these groups, there appear to be multiple individuals based on observed differences in leaf and bract lengths, widths, shape, and hairiness (Elvin and Sanders, pers. obs. 2002). In 2002 Sanders estimated that there are more than 300 flower stems (see attached CNDDB form, *Appendix C*). Honey bees, cabbage white butterflies, and damsel flies have been observed visiting the flowers (Elvin and Weigand, Dudek, pers. obs. 2002). The ground was cool and completely wet in September of the driest year in recorded history; therefore, the area is likely to be wet all year long. A CNDDB form is included in *Appendix C*. The same

Helianthus plants were observed in 2003. The mapped area is from data gathered in 2002. Focused surveys were not conducted for this species throughout the rest of the study area.

4.2.8 *Juglans californica* (southern California black walnut)

Southern California black walnut has no state or federal status, but is found on List 4 of the CNPS *Inventory*. Within its distributional range in southern California, this species is found as scattered occurrences throughout chaparral, cismontane woodlands, and coastal and alluvial scrub habitats (CNPS 2001). Southern California walnut was not observed during limited focused sensitive plant surveys conducted in 1992 (Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996). This large shrub to tree was incidentally observed as an occasional component of mixed chaparral, California sagebrush and alluvial scrub primarily along the north slope of the ridge between Potrero Canyon and Grave/Salt Creek Canyons. CNDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.9 *Juncus acutus* var. *leopoldii* (southwestern spiny rush)

Southwestern spiny rush has no state or federal status, but is found on List 4 of the CNPS *Inventory*. It is a perennial herb that grows in mesic areas such as meadows, marshes, and seeps. It is widespread occurring from San Louis Obispo to Baja California, Mexico (CNPS 2001). Southwestern spiny rush was occasional in mesic riparian areas such as along the Santa Clara River. CNDDB forms were not completed for this species because of its relatively low sensitivity.

4.2.10 *Nemophila parviflora* var. *quercifolia* (oak-leaved nemophila)

Oak-leaved nemophila has no state or federal status, but is found on List 4 of the CNPS *Inventory*. It is a small annual herb that occurs as an understory plant in forests and ravines from Los Angeles County through Kern County along the Sierras to Oregon (CNPS 2001). The oak-leaved nemophila was only found once on a northeast facing slope in oak woodland east of Grapevine Mesa. CNDDB forms were not completed for this species because of its relatively low sensitivity.

5.0 ACKNOWLEDGMENTS

Sherri L. Miller, Mark A. Elvin, Kam Muri and Cathleen Weigand prepared this report, with review by staff at The Newhall Land and Farming Company. Mark McGinnis provided graphics and GIS mapping analyses. Tonette S. Foster provided word processing.

6.0 LITERATURE CITED

Abrams, L. 1923. Illustrated Flora of the Pacific States. Stanford University Press, Stanford, California.

Allan E. Seward Engineering, Inc. 2002. Geological Evaluation, San Fernando Valley Spineflower Occurrences. Letter report prepared for Gatzke, Dillon and Balance, LLP, October 2002.

Boyd, S. 1999. Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California. *Aliso* 18(2): 93-129.

CalFlora (www.CalFlora.org).

California Department of Fish and Game. 2001. Report to the Fish and Game Commission on the Status of San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*). Prepared by Mary Meyer, Plant Ecologist and Melanie Gogol-Prokurat, Assistant Botanist. Habitat Conservation Planning Branch, Status Report 2001-1

California Natural Diversity Data Base. California Department of Fish and Game. 2002. Special Plants. Sacramento, California. January.

California Natural Diversity Data Base. California Department of Fish and Game. 2002. Rarefind survey results for the Newhall Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi, Thousand Oaks, and Val Verde Quadrangles. March.

CNPS. 2001. Inventory of Rare and Endangered Vascular Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David Pl Tibor, Convening Editor. California Native Plant Society. Sacramento, CA. 388pp.

Dale, N. 1985. *Flowering Plants: The Santa Monica Mountains, Coastal & Chaparral Regions of Southern California.* Capra Press, Santa Barbara. 239 pp.

Dames and Moore. 1993. Biological Resources of the Upland Areas of the West Ranch. Unpublished report prepared for the Newhall Land and Farming Company, Planning Department, Valencia, California. Prepared by Dames and Moore, Santa Barbara. July.

Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. 2000. Revised Report: Biology of the San Fernando Valley Spineflower, Ahmanson Ranch, Ventura County, California. Unpublished report prepared for the Ahmanson Land Company by Glenn Lukos Associates, Inc. and revised by Sapphos Environmental, Inc.

Hickman, J. C. 1993. The Jepson Manual: Higher plants of California. University of California Press, Berkeley. 1400 pp.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Non-game-Heritage Program, California Department of Fish and Game.

Los Angeles Times. 2002 *Dry Cycle May Spin On for Years; Weather: Region's drought could be augering a longer trend, scientists warn.* June 30.

Magney, D. 2002. Checklist of Ventura County Rare Plant Species. California Native Plant Society, Channel Islands Chapter. 23 pp.

Munz, P.A. 1974. A Flora of California. University of California Press, Berkeley. 1086 pp.

PCR et al. 2002. Biological Resources Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area, including Existing SEA No. 13, 14, 20, 21, 63, and 64, Los Angeles County, California. November.

Raven, P., H.J. Thompson, and B.A. Prigge. 1986. *A Flora of the Santa Monica Mountains, California*. Southern California Botanists Special Publication No. 2. 181 pp.

RECON and Impact Sciences, Inc. 1996. Biota Report, Newhall Ranch Specific Plan, Santa Clara River Valley, California, Tentative Tract Map 44831. Unpublished report prepared for Los Angeles County, Department of Regional Planning. September 7, 1995; revised July 1996.

Roberts, F. R. 1998. A Checklist of the Vascular Plants of Orange County, California. Second edition, F.R. Roberts Publications, Encinitas, CA

Sawyer, J.O. and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. 471 pp.

Smith, C.F. 1976. Flora of the Santa Barbara Region, California. Santa Barbara Botanic Garden and Capra Press. 391 pp.

United States Fish and Wildlife Service (USFWS). 1999. Federal Register, Part 8, Endangered and Threatened Wildlife and Plants; Plant and Animal Taxa. 50 CFR Part 17. Department of the Interior. December.

U.S. Department of Agriculture (USDA). 1969. Soil Survey, Antelope Valley Area, California. 187 pp.

Vanderwier, J.M. 1995. Field notes taken during surveys of Newhall Ranch, April 11-13.

Western Regional Climate Center. 20002. 12-month Accumulated Precipitation from Normal through end of August 2002; 12-month Accumulated Precipitation Departure from Normal through the end of August 2002; 12-month Percent of Average Precipitation through the end of August 2002; and 12-month Standardized Precipitation Index through the end of August 2002.

APPENDIX A

RESUMES OF SURVEY PERSONNEL

MICHELLE L. BALK
Environmental Specialist

EDUCATION / REGISTRATION

University of Akron
M.S., Biology with emphasis Ecology and Evolution, 1999

Iowa State University
B.S., Zoology, 1997

PROFESSIONAL CERTIFICATIONS

Quino Checkerspot Butterfly 10a Survey Permit
(USFWS Federal Permit)

EXPERIENCE SUMMARY

Ms. Balk has over two years of experience in environmental document preparation and resource conservation planning. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design and monitoring, and endangered species surveys. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Ms. Balk has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

PROFESSIONAL ASSIGNMENTS

Residential Development. Irvine, California. Assisted in USFWS protocol surveys for the Coastal California Gnatcatcher.

Conservation Planning. Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included reserve design, document preparation, interagency coordination and public outreach.

Residential Development. Riverside County, California. Conducted wetland delineation and prepared permit applications for 51-unit housing development.

Public University Student Housing Project. San Marcos, California. Conducted vegetation mapping and wetland delineation, prepared permit applications, and coordinated with resource agencies for student housing project.

Residential Development. Rancho Santa Fe, California. Performed environmental assessments and prepared encroachment permit applications for open space encroachments.

Creek Maintenance Project. Poway, California. Performed wetlands delineation and vegetation mapping for creek maintenance project.

Sewer Realignment. Carlsbad, California. Assisted in the wetland delineation and vegetation mapping for sewer realignment project.

Residential Developments. Laguna Beach and Oxnard, California. Mapped vegetation, surveyed for sensitive plants, and wrote biological resources reports for residential developments.

Utility Pole Maintenance Project. San Bernardino Mountains, California. Conducted botanical surveys and surveyed for sensitive plants at pole replacement locations.

Salt Marsh Restoration Project. San Diego, California. Performed vegetation mapping and prepared biological resources report for marsh restoration project.

Focused Botanical Survey. Newhall Ranch, Los Angeles County, California. As team botanist, performed focused survey for San Fernando Valley spineflower on a 6,000-acre project site.

PUBLICATIONS

"Phenotypic effects of leptin in an ectotherm: a new tool to study the evolution of life histories and endothermy?", with P.H. Niewiarowski and R.L. Londraville. The Journal of Experimental Biology 203:295-300, 2000.

"Sprint speed variation in hatchling fence lizards as a function of ontogenetic stage and population," with P.H. Niewiarowski and J.M. Engelhardt. In preparation.

"Phylogenetic Analysis of Reaction Norm Evolution in North American Softshell Turtles," with F.J. Janzen. In preparation.

RELEVANT EXPERIENCE

Volunteer, Project Wildlife, San Diego, CA. Cared for injured wildlife and reared baby birds at wildlife rescue organization.

"Sunday Birds" field ornithology course with San Dieguito Adult School, Encinitas, CA.

SCOTT BOCZKIEWICZ

Biologist/Habitat Restoration Specialist

EDUCATION

- University of Wisconsin, Madison
  B.S. Biological Conservation, 1994

PROFESSIONAL AFFILIATIONS

- The Society for Wetland Scientists (SWS)
- The Society for Conservation Biology (SCB)
- The Society for Ecological Restoration -California Chapter (SERCAL)

EXPERIENCE SUMMARY

Mr. Boczkiewicz has a diverse range of work experience in the biological sciences, with emphasis in conservation biology, wetland science, and restoration ecology. He has progressive experience evaluating impacts to sensitive, rare, threatened and endangered plant and wildlife species in Southern California, and has conducted sensitive species assessments, biological resource inventories, vegetation mapping, wetland delineations, and focused surveys for botanical and wildlife species. Scott has also conducted biological monitoring of construction and infrastructure maintenance projects occurring in environmentally sensitive and/or protected areas throughout San Diego and Orange County. Scott has produced assessments of wetlands and uplands to support management plans and planning studies, designed mitigation plans and habitat restoration and monitoring plans for riparian, wetland, and upland habitats, identified regulatory issues for development and infrastructure projects to guide project designs, and completed permit applications supporting project compliance with federal, state, and local environmental regulations.

PROFESSIONAL ASSIGNMENTS

- **El Cuervo Norte Wetland Mitigation - City of San Diego, CA.** Provided mitigation site analysis including an HGM-based wetland assessment and designed a conceptual wetland creation and enhancement plan to mitigate impacts to jurisdictional wetlands resulting from construction of State Route 56 (SR-56). The 25-acre El Cuervo Norte riparian creation and enhancement project will occur in the west end of the Los Peñasquitos Canyon Preserve beginning in March of 2004.

- **Biological Resource Surveys - Escondido Creek Conservancy, Escondido, CA.** Conducted biological resources surveys and a wetland delineation in 2002 to provide baseline biological site information supporting development of a long-term management plan for a 75-acre preserve property along Escondido Creek in unincorporated San Diego County.

- **As-Needed Biological Consultant - City of San Diego, CA.** Provided pre-construction biological resource surveys, vegetation mapping, biological monitoring, revegetation designs, and Environmentally Sensitive Lands (ESL) compliance documents for multiple projects requiring service of existing sewer mains within urban-canyons throughout the city of San Diego during 2001 through 2003.

- **Adobe Falls Supplemental Environmental Project - City of San Diego, CA.** Provided a biological resources assessment and designed a restoration plan and site specific erosion control for a 4-acre riparian wetland site along Alvarado Creek in San Diego, and providing monitoring during implementation of the project in 2003.

- **Newhall Ranch Biological Resource Surveys - Newhall, California.** Assisted with focused surveys for the San Fernando Valley spineflower and other sensitive plant surveys on Newhall Ranch and adjacent land-holdings during 2002 and 2003.

- **NCTD Oceanside to Escondido Railway - Oceanside, CA.** Assisted with daily monitoring of brown-headed cowbird traps on the project alignment during 2003.

- **Rim of The World Herptological Surveys - San Bernardino, CA.** Conducted surveys during 2003 for three threatened and endangered frog species within US Forest Service lands with planned trail improvements.

- **Laborde Canyon Herptological Surveys - CA.** Designed, installed, and monitored a herptological pit-fall trap array during 2002 to support development of a land management plan and establishment of an Off-Highway Motorized Vehicle Recreation Area.

- **Camelot Sensitive Plant Surveys - Escondido, CA.** Conducted sensitive biological resource surveys on a 50-acre site to support development plans and a reserve design for the property.

CURRICULUM VITAE
MARK A. ELVIN

EDUCATION:

M.S. Ecology and Evolutionary Biology. 1992. University of California, Irvine.
B.A. Biology and Philosophy. 1986. University of North Carolina, Chapel Hill.

PROFESSIONAL EXPERIENCE:

Senior Botanist/Biologist
Dudek & Associates, Inc. February 2001-Present.

- ***Responsibilities:*** head botanist for Dudek; task leader/lead botanist (direct, coordinate, and supervise field work and schedules) for numerous projects; manage, supervise, direct, plan and coordinate activities of junior biologists; track work progress and assign schedules; monitor budgets for projects; ensure completion of projects on schedule; communicate effectively with staff in office, project proponents, and regulatory agencies; provide guidance and direction to junior/subordinate staff; knowledge of plants (especially rare plants) throughout southern California; knowledge of fish and wildlife laws and regulations; plan, direct, and perform ecological and biological investigations of complex development proposals to determine their effects on flora and fauna; analyze data and evaluate impacts of proposed projects; write objective reports of investigations; plan, direct, and perform field investigations of wildlife and ecosystem resources; design, conduct, and analyze monitoring studies; conduct literature reviews; write reports; participate in complex negotiation sessions with project proponents and regulatory agency staff; provide technical assistance and guidance to other staff in the office; write project proposals.

- ***Field work:*** Conduct ecological and biological investigations and surveys of flora and fauna throughout southern California including San Diego, San Bernardino, Los Angeles, Orange, and Riverside counties; conducted focused surveys for *Chorizanthe parryi* var *fernandina* on 15,000 acres in Los Angeles County; conduct focused surveys for *Phacelia stellaris* for the MSHCP.

- ***Accomplishments:*** Discovered new occurrences of *Chorizanthe parryi* var. *fernandina* (a State listed species and Federal candidate), *Phacelia stellaris* (a plant that was thought to be extinct); discovered a plant that may be *Helianthus nuttallii* ssp. *parishii* (a plant that was thought to be extinct); discovered new populations of an undescribed species of *Gnaphalium*.

Museum Scientist
University of California, Irvine. February 1999-Present.

- ***Responsibilities:*** Manage UCI Arboretum scientific plant collections; manage UCI Herbarium (IRVC) with approximately 27,000 specimens; provide guidance and direction to subordinate staff; plan and conduct field work for germplasm collections; maintain and updated all plant bases; document collections/accessions with voucher specimens to be stored in the UCI Herbarium (IRVC); coordinate pest management of collections; coordinate research projects; write grants; coordinate and conduct public education at the Arboretum pertaining to ecology, conservation, evolution, and adaptations to arid environments.

- ***Field work:*** Conduct ecological and biological investigations, surveys, and collections for plant species throughout Orange, San Diego, Riverside, San Bernardino, and Los Angeles counties and Baja California, Mexico.

- ***Accomplishments:*** Participated in floristic surveys of the San Joaquin Fresh water Marsh, UCI Open Space Preserve, Burn's Reserve with objective of publishing a species lists for each site; lead multi-organization floristic survey of the San Ysidro Mountains; designed, coordinated, and began implementation of a southern California sensitive habitats garden; coordinated the design and implementation of a southern African Bulb Bed; initiated propagation program for California natives to be placed in garden sections.

Fish and Wildlife Biologist
United States Department of the Interior, Fish and Wildlife Service.
August 1998-February 2001.

- ***Responsibilities:*** Conducted scientific reviews and analyses of species statuses for proposing and designating critical habitat within court ordered deadlines for listed fauna and flora; conducted scientific reviews and analyses of species statuses and develop recovery plans for listed species; planned, directed, and performed ecological and biological investigations of complex development proposals to determine their effects on flora and fauna; analyzed data and evaluated impacts of proposed projects; wrote objective reports of investigations; planned, directed, and performed field investigations of wildlife and ecosystem resources; designed, conducted, and analyzed monitoring studies; conducted literature reviews; wrote reports; participated in complex negotiation sessions with project proponents; provided technical assistance and guidance to other staff in the office; implemented City of San Diego Multiple Species Conservation Plan (MSCP) for the USFWS; operated as the main contact for the Quino checkerspot butterfly; operated as the staff biologist for Miramar Marine Corps Air Station, City of El Cajon, Bureau of Land

management-San Diego District, Immigration and Naturalization Service, Border Patrol-San Diego Sector.

- ***Field work:*** Conducted onsite ecological and biological investigations and surveys of complex development proposals to determine their effects on flora and fauna throughout San Diego County; conducted surveys for *Deinandra conjugens* and *Ambrosia pumila*, rare plants on the Sweetwater Marsh National Wildlife Refuge, Quino checkerspot butterfly in numerous locations in San Diego County.

- ***Accomplishments:*** Developed, negotiated, and completed the complex and contentious Habitat Conservation Plan for Evergreen Nursery in Oceanside, CA; persuaded the Border Patrol to initiate consultation for their ongoing program of activities throughout southern California; as a staff biologist for the San Diego branch, I was recognized for maintaining a high level of performance throughout my tenure, while managing a large workload that involved many controversial and contentious issues, and for being the primary contact for San Diego County for the Quino checkerspot butterfly and its flora; recognized for developing a slide show of the sensitive flora and habitats within the Carlsbad Field Office; received three awards: one for completing the Proposed Designation of Critical Habitat for *Deinandra conjugens* and working to complete surveys for it on the San Diego National Wildlife Refuge, one for my contributions to the Quino checkerspot butterfly survey areas and recovery map, and one for assisting in a complex consultation with a short deadline with San Diego Gas and Electric; was personally requested to conduct a rare plant survey of the Sweetwater Marsh National Wildlife Refuge.

Owner/Biologist
Elvin Environmental. March 1997-December 1999.

- ***Responsibilities:*** Conducted general and specific biological/botanical surveys of project sites (with emphasis on sensitive species); analyzed and assessed biological and ecological data; prepared reports on environmental analysis of development proposals; conducted biological and ecological consultations; conducted ecological and conservation research and data collection; prepared research reports and publications; produced biological/botanical documentation and voucher specimens.

- ***Field work:*** Conducted onsite ecological and biological investigations and surveys of complex development proposals to determine their effects on flora throughout Los Angeles, Orange, San Diego, San Bernardino, and Riverside counties.

- ***Accomplishments:*** Conducted a multiyear botanical survey of the 600,000-acre Marine Corps Air Ground Combat Center Twentynine Palms (MCAGCC), California in the

Mojave Desert; conducted a multiyear study at MCAGCC of approximately 100 disturbance plots/transects which included developing protocols, collecting and assessing data for the monitoring program to analyze the effects of disturbance on fragile desert ecosystems for the development of an Integrated Natural Resource Management Plan.

Seed and Conservation Program Coordinator
Rancho Santa Ana Botanic Garden. April 1996-May 1997.

- ***Responsibilities:*** Managed, supervised, planned, directed, and coordinated the operational activities of the Seed and Conservation Program; supervised and provided guidance to subordinate staff; managed, coordinated, and conducted all California native flora conservation activities: planned, coordinated, and conducted field work for general and specific surveys, status reports, ecological investigations, germplasm collections, research projects, and Garden contract work; determined germplasm collection priorities; planned, coordinated, and conducted surveys for threatened or endangered species and prepared reports for Federal, State, and private agencies; developed species management protocols; acquired and administered all Garden collecting permits with Federal, State, and private agencies including permits for State and Federally listed species; interfaced with Federal, State, and private agencies regarding endangered species as the Garden representative; coordinated Garden activities with Federal, State, and private agencies; directed the Center for Plant Conservation program at Rancho Santa Ana Botanic Garden as the Garden representative; managed the Seed Program at Rancho Santa Ana Botanic Garden: developed and tracked program goals, objectives, and budget; supervised staff and volunteers; managed all garden seed collections and associated databases.

- ***Field work:*** Conducted onsite ecological and biological investigations and surveys for threatened and endangered plant species throughout Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Baja California (Mexico), Ventura, Monterey, San Benito, and San Luis Obispo counties.

- ***Accomplishments:*** Established the Seed Program unifying all Garden seed collections; developed and wrote the Seed Management Guidelines for the Seed Program at Rancho Santa Ana Botanic Garden which included policies and procedures for seed collecting and cleaning, germplasm collection strategies, and the storage of that material in cooperation/consultation with the U.S. Fish and Wildlife Service, U.S. Department of Agriculture, and the California Department of Fish and Game; tripled number of sensitive species in Long Term Storage through ambitious field schedule; updated seed storage guidelines and protocols for seed storage; established page on the Garden's web site for the Seed Program's electronic inventory.

Seed Technologist
Rancho Santa Ana Botanic Garden. January 1994-April 1996.

- ***Responsibilities:*** Managed and coordinated all aspects related to Garden seed collections (especially pertinent to sensitive species); planned, directed, and conducted field work (general and specific surveys and collections); determined target species for field work and germplasm collections; developed databases, curated, and documented seed collections with voucher specimens and germination/viability test results; conducted seed related research; produced publications/reports for the Garden as well as various Federal, State, and private agencies; administered Garden collecting permits and completed associated reports; interfaced with public and private entities/agencies on behalf of the Garden; managed volunteers; managed seed storage and growth chamber facilities.

- ***Field work:*** Conducted onsite ecological and biological investigations and surveys for threatened and endangered plant species throughout Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Baja California (Mexico), Ventura, Monterey, San Benito, and San Luis Obispo counties.

- ***Accomplishments:*** Expanded Long Term Storage Collection by 50% first year and 25% second year, established new protocols for storage of Long Term Collection, initiated documentation of all seed accessions (viability/germination testing and specimen vouchers), initiated volunteer program, developed long term goals on unification of seed collections under a Seed Program/Department.

Conservation Collections Manager
University of California, Irvine. September 1992-May 1996.

- ***Responsibilities:*** Managed UCI Arboretum living plant and cryogenic seed collections; planned and conducted field work for germplasm collections; maintained and updated all plant and seed data bases; coordinated pest management of collections; coordinated research projects; wrote grants; coordinated and conducted public education at the Arboretum pertaining to ecology, conservation, evolution, and adaptations to arid environments.

- ***Field work:*** Conducted ecological and biological investigations and surveys for threatened and endangered plant species throughout Orange, San Diego, and Riverside counties.

- ***Accomplishments:*** Modified the Arboretum's collections' policies; expanded the Arboretum's mission to include the conservation of native California monocots through the initiation of a California Native Monocot Gene Bank; revised Petalloid Monocot

collection catalogue; built two shade houses for bulb collections at Arboretum; initiated field collections of California Natives; managed and trained team of nine undergraduate researchers.

Teaching Assistant
University of California, Irvine. September 1990-May 1993.

- ***Responsibilities:*** Taught introductory and upper division biology classes and laboratories for undergraduate students and assisted professors with courses.

FIELD EXPERIENCE:
September 1988-Present.

MEXICO: Baja California (Mexico).

CALIFORNIA:

- ***Counties:*** Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial, Ventura, Monterey, San Benito, San Luis Obispo.

- ***Areas:*** Central Coastal Ranges (Diablo Range, Gabilan Range, Temblor Range, Santa Lucia Mountains); Transverse Range (San Bernardino Mountains, San Gabriel Mountains, Liebre Mountains, Santa Susana Mountains); Mojave Desert (western, eastern, and southern); Sonoran Desert (northern, eastern, western, and southern); Peninsular Range (Gavilan Plateau, Laguna Mountains, Cuyamaca Mountains, San Jacinto Valley, San Jacinto Mountains, Santa Rosa Mountains, Santa Ana Mountains, Santa Rosa Plateau, Sierra Juarez, Palomar Mountains, San Ysidro Mountains); Coastal southern and central California and associated foothills (including Otay Mesa, Mira Mesa, Del Mar Mesa, Palos Verdes Peninsula, San Clemente Island, Santa Catalina Island).

- ***Habitats:*** coastal strand, dune, coastal marsh, estuarine, coastal bluff scrub, coastal sage scrub, maritime succulent scrub, southern maritime chaparral, chaparral, valley grass lands, vernal pools, riparian scrub, riparian woodland, southern oak woodlands, aluvial fan sage scrub, montane coniferous forest, pebble plains, montane meadows, pinyon-juniper woodland, joshua tree woodland, sagebrush scrub, creosote bush scrub, alkali flats, desert mountains, creosote bush scrub, Mojavean desert scrub, Sonoran desert scrub.

- Sensitive species:

Plants: *Abies bracteata, Abronia maritima, A. villosa* var. *aurita, Acanthomintha ilicifolia, A. obovata* ssp. *cordata, A. obovata* ssp. *obovata, Achnatherum diegoensis, Adolphia californica, Agave shawii, A. utahensis, Allium munzii, A. parishii, Ambrosia chenopodifolia, A. pumila, Arabis johnstonii, A. parishii, Arctomecon merriamii, Arctostaphylos gabrielensis, A. glandulosa* ssp. *crassifolia, A. montereyensis, A. otayensis, A. rainbowensis, Arenaria macradenia* var. *kuschei, A. ursina, Artemisia nesiotica*, *A. palmeri, Asclepias asperula* ssp. *asperula, Astragalus albens, A. ertterae, A. jaegerianus, A. lentiginosus* var. *sierrae, A. leucolobus, A. miguelensis, A. nevinii, A. tener* var. *titi, Atriplex coronata* var. *notatior, A. coulteri, A. pacifica, Azolla mexicana, Baccharis vanessae, Berberis fremontii, B. nevinii, Bergerocactus emoryi, Boykinia rotundifolia, Brodiaea filifolia, B. kinkiensis, B. orcuttii, Calandrinia breweri, Calochortus catalinae, C. clavatus* var. *gracilis, C. clavatus* var. *recurvifolius, C. concolor, C. dunnii, C. palmeri* var. *munzii, C. palmeri* var. *palmeri, C. plummerae, C. striatus, C. weedii* var. *intermedius, C. weedii* var. *vestus*, *Calystegia macrostegia* ssp. *amplissima, C. peirsonii, Camissonia boothii* ssp. *boothii, C. boothii* ssp. *intermedia, C. guadalupensis* ssp. *clementina, C. lewisii*, *Canbya candida, Carnegiea gigantea, Castela emoryi, Castilleja cinerea, C. gleasonii, C. grisea, C. lasiorhyncha, C. plagiotoma, Caulanthus simulans, Ceanothus cyaneus, C. megacarpus* var. *insularis, C. ophiochilus, C. otayensis, C. verruccosus, Centromadia parryi* ssp. *australis, C. pungens* ssp. *laevis, Cercidium microphyllum, Cercocarpus minutiflorus, Chaenactis glabriuscula* var. *orcuttiana, Chamaebatia australis, Chlorogalum purpureum* var. *purpureum, C. purpureum* var. *reductum, Chorizanthe leptotheca, C. orcuttiana, C. parryi var. fernandina, C. parryi* var. *parryi, C. polygonoides* var. *longispina, C. procumbens, Cirsium occidentale* var. *compactum, Clarkia delicata, Comarostaphylis diversifolia* ssp. *diversifolia, Convolvulus simulans, Cordylanthus maritimus* ssp. *maritimus, C. orcuttianus, Coreopsis gigantea, C. maritima, Corethrogyne filaginigolia* var. *linifolia, Crossosoma californicum, Cryptantha holoptera, C. traskiae, Cupressus forbesii, C. macrocarpus, C. stephensonii, Cynanchum utahense, Deinandra clementina, D. conjugens, D. floribunda, D. paniculata, Delphinium hesperium* ssp. *cuyamacae, D. variegatum* ssp. *kinkiense, D. variegatum* ssp. *thornei*, *Dicentra chrysantha*, *Dichondra occidentalis*, *Downingia concolor* var. *brevior*, *Draba douglasii* var. *crockeri*, *Dudleya attenuata* ssp. *orcuttii, D. abramsii* ssp. *affinis, D. blochmaniae* ssp. *blochmaniae, D. brevifolia, D. cymosa* ssp. *ovatifolia, D. densiflora, D. multicaulis, D. saxosa* ssp. *saxosa, D. variegata, D. virens* ssp. *hassei, D. virens* ssp. *virens, D. viscida, Echinocactus polycephalus* var. *polycephalus, Echinocereus engelmannii* var. *munzii, Eriastrum densifolium* ssp. *sanctorum, Ericameria palmeri* ssp. *palmeri, Eriodictyon traskiae* ssp. *traskiae, Eriogonum davidsonii, E. foliosum, E. giganteum* var. *formosum, E. grande* var. *grande, E. kennedyi* var. *austromontanum, E. microthecum* var. *johnstonii, E. ovalifolium* var. *vineum, E. umbellatum* var. *minus, Eriophyllum lanatum* var. *obovatum, E. nevinii, Erodium macrophyllum, Eryngium aristulatum* var. *parishii, Erysimum capitatum* ssp. *angustatum, Eschscholzia ramosa, Escobaria vivipara* var. *alversonii, Euphorbia misera, Ferocactus cylindraceus, F. viridescens, Frankenia plameri, Fremontodendron mexicanum, Fritillaria biflora, Galium*

angustifolium ssp. *gabrielense, G. angustifolium* ssp. *gracillimum, G. angustifolium* ssp. *jacinticum*, G. *californicum ssp. primum, G. catalinense* ssp. *acrispum, G. grande, G. johnstonii, G. nuttallii* ssp. *insulare, Galvesia speciosa, Gilia caruifolia, G. nevinii, Gnaphalium sp. nova, Grindelia hirsutla* var. *hallii, Harpagonella palmeri, Hazardia cana, H. orcuttii, Helianthus nuttallii* ssp. *parishii, Heuchera abramsii, H. elegans, Holocarpha virgata* ssp. *elongata, Hordeum intercedens, Horkelia cuneata* ssp. *puberula, H. truncata, Hulsea californica, H. mexicana, H. vestita* ssp. *callicarpha, H. vestita* ssp. *gabrielensis, Ipomopsis polycladon, Isocoma menziesii* var. *decumbens, Iva hayesiana, Ivesia argyrocoma, Jepsonia malvifolia, J. parryi, Juglans califonica, Juncus acutus* ssp. *leopoldii, J. duranii, Lasthenia burkei, L. glabrata* ssp. *coulteri, Lathyrus splendes, Lavatera assurgentiflora* ssp. *glabra, Layia carnosa, Lepechinia fragrans, L. ganderi, Lepidium virginicum var. robinsonii, Lesquerella kingii* ssp. *bernardina, Lilium humboltii* ssp. *ocellatum, L. parryi, Limnanthes gracilis* ssp. *parishii, L. vinculans, Linanthus arenicola, L. bellus, L. killipii. L. pygmaeus* ssp. *pygmaeus, Lithophragma maximum, Lomatium insulare, Lotus argophyllus* var. *adsurgens*, *L. argophyllus* var. *argenteus, L. dendroideus* var. *traskiae, L. nuttallianus, L. otayensis, Lupinus excubitus* var. *johnstonii, L. guadalupensis, Lycium brevipes* var. *hassei, Lycium californicum, Lyonothamnus floribundus* ssp. *asplenifolius, L. floribundus* ssp. *floribundus, Madia radiata, Malacothamnus abbottii, M. aboriginum, M. clementinus, M. davidsonii, M. jonesii, M. palmeri* var. *involucratus, Microseris douglasii var. platycarpha, Mimulus clevelandii, M. exiguus, M. flemengii, M. purpureus, M. shevockii, Monardella beneolens, M. cinerea, M. douglasii* ssp. *venosa, M. hypoleuca* ssp. *lanata, M. linoides* ssp. *viminea, M. macrantha* ssp. *hallii, M. nana* ssp. *leptosiphon, M. robisonii, M. stoneana*, *Mucronea californica, Muhlenbergia californica, Muilla clevelandii, M. coronata, M. transmontana, Myosurus minimus* ssp. *apus, Navarettia fossalis, N. sp. nova, Nemacaulis denudata* var. *denudata, Oenothera deltoides* ssp. *howellii, Opuntia basilaris* var. *brachyclada, O. californica* var. *californica, O. wigginsii, Orcuttia californica, Ornithostaphylos oppositifolia, Parnassia cirrata, Penstemon albomarginatuus, P. californicus, Pentachaeta aurea, Perideridia parishii* ssp. *parishii, P. pringlei, Phacelia stellaris, P. suaveolens* ssp. *kecki, Phlox dolichantha, Pholisma arenarium, Pinus edulis, P. radiata, P. torreyana* ssp. *torreyana, Poa atropurpurea, Pogogyne abramsii, P. nudiuscula, Potentilla hickmanii, Psorothamnus arborescens* var. *arborescens, P. arborescens* var. *simplicifolius, Quercus cedrosensis, Q. dumosa, Q. engelmannii, Q. lobata, Q. pacifica, Q. tomentella, Q. turbinella, Ribes viburnifolium, Romneya coulteri, R. trichocalyx, Rosa minutifolia, Salvia clevelandii, S. munzii, Satureja chandleri, Sclerocactus polyancistrus, Scrophularia villosa, Selaginella asprella, S. cinerascens, S. eremophila, S. leucobryoides, Senecio aphanactis, S. bernardinus, S. blochmanneae, S. lyonii, Sibara filifolia, Sibaropsis hammittii, Sidalcea neomexicana, S. pedata, Solanum tenuilobatum, S. wallacei, Spaeralcea rusbyi* var. *eremicola, Stemodia durantifolia, Stephanomaria blairii, Streptanthus bernardinus, Stylomecon heterophylla, Suaeda esteroa, S. taxifolia, Syntrichopappus lemmonii, Taraxacum californicum, Tetracoccus dioicus, Thelypodium stenopetalum, Trifolium gracilentum* var. *palmeri, T. polyodon, Triteleia clementina, Verbesina dissita, Viguiera laciniata, Washingtonia filifera, Wislizenia refracta* var. *refracta.*

Animals: vernal pool fairy shrimp (*Branchinecta lynchi*), San Diego fairy shrimp (*Branchinecta sandiegoensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), Quino checkerspot butterfly (*Euphydryas editha quino*), Augusta's checkerspot butterfly (*Euphydryas editha augustina*), Harbison's dun skipper (*Euphyes vestris harbisoni*), Hermes copper butterfly (*Lycaena hermes*), desert pupfish (*Cyprinodon macularius*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), southwestern arroyo toad (*Bufo californicus*), western spadefoot toad (*Scaphiopus hammondii*), southwestern pond turtle (*Clemmys marmorata pallida*), orange-throated whiptail (*Cnemidophorus hyperythrus*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), northern red diamond rattlesnake (*Crotalus ruber ruber*), desert tortoise (*Gopherus agassizii*), rosy boa (*Lichanura trivirgata*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), chuckwalla (*Sauromalus obesus*), two-striped garter snake (*Thamnophis hammondii*), Mojave fringe-toed lizard (*Uma scoparia*), island night lizard (*Xantusia riversiana*), burrowing owl (*Athene cunicularia*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegoense*), western snowy plover (*Charadrius alexandrinus nivosus*), southwestern willow flycatcher (*Epidonax traillii extimus*), peregrine falcon (*Falco peregrinus*), California condor (*Gymnogyps californicus*), bald eagle (*Haliaeetus leucocephalus*), San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*), Belding's savannah sparrow (*Passerculus sandwhichensis beldingi*), California brown pelican (*Pelecanus occidentalis californicus*), coastal California gnatcatcher (*Polioptila californica californica*), light footed clapper rail (*Rallus longirostris levipes*), California least tern (*Sterna antillarum brownii*), least Bell's vireo (*Vireo bellii pusillus*), southern sea otter (*Enhydra lutris nereis*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), San Diego desert woodrat (*Neotoma lepida intermedia*), California bighorn sheep (*Ovis canadensis californiana*), peninsular bighorn sheep (*Ovis canadensis cremnobates*), island fox (*Urocyon littoralis*).

NORTH CAROLINA, **VIRGINIA**, and **WEST VIRGINIA**: January 1980-October 1986.

INVITED TALKS:

- California Native Plant Society, Orange County and San Diego Chapters. 03-04 May 2003. A botanical exploration and collecting expedition in the International Border region of southern California, USA, and Baja California, Mexico (with Andrew C. Sanders, Jon Rebman, Fred Roberts, Thomas Oberbauer, and Michael Simpson).

- California Native Plant Society, Orange County Chapter. 16 January 2003. Botanical exploration in southern California (with Andrew C. Sanders).

- Southern California Botanists Society. 19 October 2002. Botanical exploration in southern California continues to yield new (and usually rare) species (with Andrew C. Sanders).

- California Native Plant Society, Orange County and San Diego Chapters. April 2001. Ecology and flora of the San Ysidro Mountains.

- California Native Plant Society, Orange County and San Diego Chapters. 21 April 2000. Ecology and flora of the San Ysidro Mountains.

- California Native Plant Society, Orange County Chapter. April 2000. Ecology and flora of the Elsinore Peak, Santa Ana Mountains.

- California Native Plant Society, San Diego County Chapter. 15 June 1999. Threatened and endangered plants of southern California. (with Scott Eliason).

- U.S. Fish and Wildlife Service, Carlsbad Field Office. 06 June 1999. Threatened and endangered plants of southern California. (with Scott Eliason).

- North Carolina Botanical Garden. 20 October 1997. Conservation efforts in southern California.

- Conejo Valley Garden Club. 22 January 1997. Rare Plants of the Santa Monica Mountains.

- Center for Plant Conservation, annual meeting, Denver, CO. 02 October 1996. Conservation efforts at Rancho Santa Ana Botanic Garden-*Hemizonia mohavensis* and *Sibara filifolia.*

- Rancho Santa Ana Botanic Garden. 14 May 1996. Rare Plants in the Peninsular Ranges.

- California Native Plant Society, Orange County Chapter. 20 April 1995. Effects of population size on fitness in *Calochortus weedii* Alph. Wood var. *weedii* (Liliaceae).

- Center for Plant Conservation, California Task Force Meeting, University of California, Berkeley. 15 August 1995. The germination of California orcutt grass, *Orcuttia californica* (Poaceae).

CONTRACTS AND GRANTS AWARDED:

- US Department of Fish and Wildlife. May 2000. $10,000. Recovery efforts for Orcutt's spineflower (*Chorizanthe orcuttii*).

- US Department of Fish and Wildlife. July 1999. $9,000. Recovery efforts for willowy monardella (*Monardela linoides* ssp. *viminea*).

- California Department of Fish and Game. May 1997. $1,000. Process and store seed of *Holocarpha macradenia* from the last population.

- US Department of Agriculture, National Forest Service, Angeles National Forest. March 1997. $1,865. Collect and store seeds of *Arenaria macradenia* var. *kuschei* (Kusch's sandwort).

- Bureau of Reclamation. January 1997. $25,000. The use of reclaimed water for restoring threatened and endangered wetland plants.

- US Department of Fish and Wildlife. August 1996. $5,000. Survey for *Malacothamnus abbottii.*

- California Native Plant Society, Orange County Chapter. January 1995. $500. Effects of population size on reproductive characters as they relate to fitness in *Calochortus weedii* Alph. Wood var. *weedii* (Calochortaceae).

- National Science Foundation Young Scholars Program. November 1994. $500. Francis Gonzalez (invited to present in the national symposium)--Effects of population size in the germination and growth of *Calochortus.*

- Institute of Museum Services-Conservation Project. October 1993. $25,000. Assessment of the petaloid monocot collection at the UCI Arboretum.

PUBLICATIONS:

ARTICLES:

- Elvin, M. A. and A. C. Sanders. (2003). A New Species of *Monardella* (Lamiaceae) from Baja California, Mexico, and Southern California, United States. *Novon* 13(4).

- Elvin, M. (2001). *Astragalus ertterae*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.

- Elvin, M. (2001). *Mimulus shevockii*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.

- Elvin, M. (2001). *Monardella beneolens*. In: Species accounts for special status plants and animals in the western Mojave Desert. Bureau of Land Management.

- Koopowitz, H., M. Elvin, and L. Keenan. (1996). *In vivo* visualization of living flatworm neurons using Lucifer Yellow intracellular injections. *J. Neurosci. Meth*. 69: 83-89.

- Koopowitz, H., M. Elvin, and T. Bae. (1995). Comparison of the nervous system of the rhabdocoel, *Mesostoma ehrenbergii*, with that of the polyclad, *Notoplana acticola*. *Hydrobiologia*. 305: 127-133.

- Elvin, M. (1994). *Gethyllis*. UCI Arboretum Quarterly. 3(2): 10-11.

- Elvin, M. (1994). The UCI Arboretum and Gene Bank Petalloid Monocot Conservation Collection.

- Elvin, M., H. Koopowitz (1994). Neuroanatomy of the rhabdocoel flatworm *Mesostoma ehrenbergii* (Focke, 1836) I: Neuronal diversity in the brain. *J. Comp. Neurol*. 343: 319-331.

OTHER DOCUMENTS:

- Elvin, M. and J. Vanderwier. 2002. Rare plant surveys and focused surveys for *Chorizanthe parryi* var. *fernandina* on Newhall Ranch. Report prepared for Newhall Land and Farming Company.

- Elvin, M. 2001. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for *Deinandra conjugens* (Otay tarplant). 66 FR 32052.

- Elvin, M. and Tierra Data Systems. 2000. Rare Plant Survey and Floristic Inventory: 1999 Year-end Report:Year three of three. Report prepared for Southwest Division naval Facilities Engineering command. Delivery Order: N68711-95-D-7605/0015.

- Elvin, M. 1999. Rare Plant Survey and Floristic Inventory: 1998 Year-end Report. Report prepared for Southwest Division naval Facilities Engineering command. Delivery Order: N68711-95-D-7605/0015.

- Elvin, M. 1997. Seed Management Guidelines for the Seed Program at Rancho Santa Ana Botanic Garden.

- Elvin, M. and V. Yadon. 1996. Current Knowledge and Conservation Status of *Malacothamnus abbottii* (Eastwood) Kearney (Malvaceae), Abbott's bushmallow. Status

report prepared for: Connie Rutherford; US Fish and Wildlife Service; 2493 Portola Road, Suite B; Ventura CA 93003; (805) 644-1766 X306 Order #: 11440-6-5118.

PHOTOGRAPHS:

- Endangered Species Bulletin. 2001. *Downingia concolor* var. *brevior*. 26:7.

- Bulletin of the California Lichen Society. 1996. V.3 #2. Cover. San Clemente Island habitat and *Calystegia macrostegia* ssp. *amplissima*.

- A field guide to the rare plants of the Angeles National Forest. 1995. USDA.
  Arctostaphylos gabrielensis, Calochortus catalinae, C. clavatus var. *gracilis, C. palmeri* var. *palmeri, C. plummerae, C. striatus, Canbya candida.*

- International Bulb Society. http://www.bulbsociety.com
  Allium fimbriatum var. *fimbriatum, A. haematochiton, A. munzii, A. praecox, Bloomeria crocea, Brodiaea filifolia, B. kinkiensis, Calochortus amabilis, C. catalinae, C. clavatus* var. *gracilis, C. concolor, C. dunnii, C. invenustus, C. kennedyi* var. *kennedyi, C. luteus, C. palmeri* var. *munzii, C. palmeri* var. *palmeri, C. plummerae, C. splendens, C. striatus, C. superbus, C. tolmiei, C. umbellatus, C. uniflorus, C. venustus, C. vestae, C. weedii* var. *intermedius, C. weedii* var. *weedii, Chlorogalum purpureum* ssp. *purpureum, C. purpureum* ssp. *reductum, Dichelostemma capitatum, D. ida-maia, Dodecatheon clevelandii* ssp. *clevelandii, Dudleya brevifolia, D. multicaulis, D. nesotica, D. variegata, Fritillaria affinis, F. biflora, Lilium humboltii* ssp. *ocellatum, Muilla maritima, Scutellaria tuberosa, Sisyrinchium bellum, Triteleia clementina, T. hyacinthina, Zigadenus venenosus, Z. freemontii* var. *fremontii.*

- Catalina Island Conservancy Intranet. http://www.catalinas.net/seer/
  Sibara filifolia.

- Center for Plant Conservation. http://www.mobot.org/CPC/
  Allium munzii.

- Rancho Santa Ana Botanic Garden Seed Program. http://www.cgu.edu/inst/rsa/seedbank.htm
  Brodiaea filifolia (titled "Conservation") and reproductive biology experiment (titled "Research").

TRAINING COURSES:

- Recovery training course (3 units), U.S. Fish and Wildlife Service; Charleston, SC. December 2000.

- Grants and Agreements training course (1 units), U.S. Fish and Wildlife Service; Carlsbad, CA. November 2000.
- Habitat Conservation Plan training course (5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. March 2000.
- Interagency consultation training course (5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. February 2000.
- Aviation safety (1 unit), U.S. Fish and Wildlife Service; Carlsbad, CA. October 1999.
- Wetland delineation (2 units), U.S. Fish and Wildlife Service; Carlsbad, CA. July 1999.
- Recovery permits and recovery plans (0.5 units), U.S. Fish and Wildlife Service; Carlsbad, CA. June 1999.
- Quino checkerspot butterfly life history and identification (1 unit), UC Riverside; Chula Vista, CA. January 1999.
- Freedom of information act (FOIA) course (1 unit), U.S. Fish and Wildlife Service; Carlsbad, CA. December 1999.
- Ecological Services Basic training course (5 units), U.S. Fish and Wildlife Service Training Center; Shepardstown, WV. 1998.
- Habitat Conservation Plan training course (2 units), U.S. Fish and Wildlife Service; Carlsbad, CA. 1998.
- International Symposium on Permits and Collecting, San Diego Museum of Natural History. 1997.
- Conservation Genetics (1 unit), Rancho Santa Ana Botanic Garden. 1996.
- Plant Families Dicots (1 unit), Rancho Santa Ana Botanic Garden. 1996.
- Southwestern Botanical Systematics Symposium: The Linnaean Hierarchy: Past, Present and Future, Rancho Santa Ana Botanic Garden. 1996.
- Plant Families, Monocots (1 unit), Rancho Santa Ana Botanic Garden. 1995.

- California Regional Task Force Meeting, Center for Plant Conservation. University of California, Berkeley. 1995.

- Southwestern Botanical Systematics Symposium: The New Morphology: Integrative Approaches, Rancho Santa Ana Botanic Garden. 1995.

OTHER ACHIEVEMENTS:

Awards

- STAR Award: Special Thanks for Achieving Results, August 2001, for completing the Proposed Designation of Critical Habitat for *Deinandra conjugens* and working to complete surveys for it on the San Diego National Wildlife Refuge.

- On the Spot Award, April 2000, for contributions to the Quino checkerspot butterfly survey and recovery map.

- On the Spot Award, March 2000, for assisting in a complex consultation with a short deadline.

Fencing

1991 US Olympic Sports Festival – Los Angeles, California.
1989 World University Games – Duisberg, Germany.
1989 US Olympic Sports Festival, Silver Medalist – Oklahoma City, Oklahoma.
1989 World Cup- Budapest, Hungary.
1989 US National Championships, Finalist, Bronze Medalist – Orlando, Florida.
1986 NCAA Championships – South Bend, Indiana.
1985 NCAA Championships – Princeton, New Jersey.

Megan Enright

Biologist

EDUCATION

- B.S., Biology-Ecology, Behavior and Evolution, University of California, San Diego (1997)
- Member, California Native Plant Society
- Member, Women's Environmental Council

EXPERIENCE SUMMARY

Ms. Enright is a biologist with six years experience in habitat restoration and biological assessments. She participated in coastal sage scrub restoration at the City of San Diego Miramar Landfill. The project included restoration design, native plant nursery management, and revegetation monitoring. Her current role at Dudek & Associates includes biological resources assessments and impact analyses, wetland delineations and permitting, vegetation mapping and rare plant surveys.

PROFESSIONAL ASSIGNMENTS

Wetlands Delineation, Wetlands Permitting, Biological Resources Reports, and Focused Rare Plant Surveys

- **Focused Rare Plant Surveys.** Newhall Ranch, Los Angeles County, California. Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *Fernandina)* and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003.

- **Pipeline Corridor**. Metropolitan Water District of Southern California, County of Riverside, California. Conducted wetlands delineation and assisted in permit coordination for the Section 401 and Section 404 permits and 1601 Streambed Alteration Agreement. Conducted initial site reconnaissance, rare plant survey, and fairy shrimp survey for the proposed alignment. In addition, assisted in siting geotechnical activities.

- **Transportation Corridor**. North County Transportation District - Oceanside to Escondido Rail Project, City of Oceanside, California. Delineated wetlands and prepared vegetation map within the Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds. Prepared Section 401 and Section 404 permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system. Prepared alternatives analysis, functional values assessment, and Conceptual Wetlands

Mitigation Plan. Assisted in the preparation of the biological resources report and CEQA documentation.

- **Roadway Corridor**. Camino Ruiz Road Alignment, San Diego-Future Urbanizing Area Subarea IV, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the roadway corridor. Prepared functional values assessment.

- **Roadway Improvements and Flood Protection Project**. City of San Marcos, California. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys along San Marcos Creek from State Route 78 to Lake San Marcos.

- **Residential Subdivision**. The Irvine Company Planning Area 1, County of Orange, California. Prepared vegetation map and conducted rare plant surveys within the 4,000-acre project site. Prepared biological resources report for CEQA purposes.

- **Residential Subdivision and Commercial** Development. The Irvine Company Planning Areas 18 and 39, City of Irvine, California. Delineated wetlands and prepared vegetation map within the 1,200-acre project site. Developed wetlands permitting strategies with client.

- **Landfill Closure and Embankment and Scour Protection**. Kern Valley Sanitary Landfill Closure Project, Kern County, California. Delineated wetlands and prepared Section 401 and Section 404 Letter of Permission permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the embankment and scour protection. Prepared functional values assessment.

- **Dredging Impact Analysis**. Old Mission Dam, San Diego, California. Prepared wetland delineation and vegetation map upstream of the historic Old Mission Dam. Prepared biological resources report for CEQA purposes. Coordinated with regulatory agencies regarding proposed dredging.

Habitat Restoration and Enhancement

- Monitored salt marsh and riparian creation and enhancement efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvement (City of San Diego, Tijuana River Emergency Channel Mitigation, Green Valley Mobile Home Park Slope Stabilization and North Metro Interceptor Sewer Projects in San Diego, California. Conducted data analysis to determine success of restoration and enhancement efforts in terms of predetermined

performance standards. Prepared subsequent monitoring reports which included the assessment of revegetation efforts and recommendations for further remedial actions.

- Monitored upland vegetative communities including coastal sage scrub revegetation efforts at Top of the World Reservoir and Pump Station, Laguna Beach, California. Prepared subsequent monitoring reports.

- Prepared Conceptual Wetland Mitigation Plan for the Emergency Sewer Repairs at various sites along Escondido Creek and for the Hale Avenue Resource Recovery Facility (HARRF) for the City of Escondido, California. Prepared Conceptual Wetland Mitigation and Revegetation Plan for the Torrey Del Mar Project within the City of San Diego Future Urbanizing Area Subarea I, California.

- Assisted in the research and documentation for mitigation alternatives for SR-125-Caltrans. Focused on mitigation through the restoration of habitat for the federally-endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*).

Construction and Erosion Control Monitoring

- Performed construction monitoring for the Sorrento Valley Utilities Improvement Project which included precise grading for the restoration of salt marsh and other riparian habitats.

- Inspected the North Reservoir Project which includes erosion/sediment methods to verify the project was in accordance with the Storm Water Pollution Prevention Program for the Laguna Beach County Water District in the City of Laguna Beach, California. Project included weekly monitoring visits to assess the function of the installed Best Management Practices for erosion control and subsequent observation reports, water quality sampling, and storm event monitoring.

Conservation Planning

- Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included research on potentially covered plant species followed by syntheses of ecological information.

DAVID FLIETNER

Biologist

Education	Master of Science, Botany, University of Florida, 1987 Bachelor of Science, Plant Science, University of California, Davis, 1983
Permits/ Certificates/ Trainings	U.S. Fish and Wildlife Service Permit #TE-008031 for Quino Checkerspot Butterfly U.S. Fish and Wildlife Service Permit #TE-797665 for Riverside Fairy Shrimp, Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, San Diego Fairy Shrimp, Vernal Pool Tadpole Shrimp, etc. CDFG Scientific Collecting Permit #003625 for Insects, Rodents/Small Mammals, Reptiles/Amphibians GIS Certificate, UC Riverside Extension, 1996 Licensed Agricultural Pest Control Adviser, #4577 (weed control) Qualified Applicator License #31356 (landscape, agriculture, and aquatic) Wetland Delineation Training, June 2000 Certified for Flat-Tailed Horned Lizard Surveys, Bureau of Land Management, 2001 Certified Biologist, County of San Diego California Society for Ecological Restoration, certificate of educational Achievement in Revegetation/Restoration Planning: The Basics, 2001 Certificate of Completion, Invasive Plant School, UC Cooperative Extension, September 2002 Certificate of Completion, Desert Tortoise Council Surveying, Monitoring, & Handling Techniques Workshop, November 2002
Responsibilities	Conducts biological resource surveys, endangered species presence/absence surveys, wetland delineations, and restoration monitoring. Biological resource surveys include vegetation mapping; species inventories; focused surveys for sensitive plant species, arroyo toad, and flat-tailed horned lizard. Conducts surveys for quino checkerspot butterfly, San Diego fairy shrimp, and Riverside fairy shrimp. Delineates wetlands according to USACE guidelines. Performs qualitative and quantitative assessments of revegetation projects. Writes biological technical reports, wetland delineation reports, habitat restoration plans and annual reports. Writes applications for Clean Water Act Section 401 and 404 permits and California Department of Fish and Game Streambed Alteration agreements. Conducts annual pesticide training for field applicators and nursery workers in Spanish. Writes pest control recommendations.

Work Experience

Dudek and Associates

2003 – present, Biologist

RECON

2000 – 2003, Biologist

Independent Consultant

1997 - 1998

Riverside Land Conservancy

1997, Executive Director

Foster Wheeler Environmental

1995 – 1996, Associate Biologist

California State Parks

1995, Environmental Services Intern

Selected Projects

Habitat Restoration

Coastal Sage Scrub, Riparian, and Wart-stemmed Ceanothus Mitigation Implementation Monitoring, San Diego Jewish Academy, San Diego

Biotechnical Report and Mitigation Plan for the Gavilan Hills/Smith Road Channel and Sediment Basin, Riverside County

Coastal Sage Scrub and Riparian Restoration Plan for the Oceanside Country Club Site, Oceanside

Coastal Sage Scrub Restoration Implementation, San Onofre State Park, Orange County

Coastal Sage Scrub and Riparian Revegetation Project Monitoring for Eastern Transportation Corridor, Santa Ana Mountains, Orange County

Riparian Restoration Monitoring, Temecula Creek for the Riverside County Transportation Department

Endangered Species Surveys

Quino Checkerspot Butterfly Surveys, Southern Portion, Los Angeles to San Diego Fiber-Optic Line, San Diego County

San Diego Fairy Shrimp and Riverside Fairy Shrimp Monitoring, Dennery Canyon Restoration Site, San Diego County

Quino Checkerspot Butterfly Surveys of Potential Reservoir Sites, San Diego

Thread-leaved Brodiea Survey and Census, San Jacinto River

Desert Tortoise Surveys, Mojave Desert

Santa Ana Woolly Star Survey and Monitoring, Lytle Creek, CA

Coachella Valley Milk Vetch Survey and Salvage at the Cimarron Golf Course, Whitewater River, CA

Biology Studies

Ysabel Creek Road Crossing of Santa Ysabel Creek and Santa Maria Creek, San Diego County

Winterhaven Drive Bridge, Imperial County

Wilson Creek Crossing, San Diego County

County Line Channel, San Bernardino and Riverside County

Wetland and Riparian Projects

Wetland Delineation for Cloverdale Leasehold, Escondido

Wetland Delineation for Wilson Creek Crossing, San Diego County

Santa Ana River Pipeline Placement Monitoring for the Western Riverside County Wastewater Treatment Authority, Riverside
Agua Hedionda Lagoon Tower Construction Monitoring in Sensitive Wetlands for San Diego Gas & Electric, San Diego

Environmental Assessments and Other Reports

Biological Assessment of SDG&E Access Road, Camp Pendleton
Report of Events Leading To Desert Tortoise Mortality and Subsequent Construction Monitoring for Reopening of Section 7 Consultation
Draft Habitat Conservation Plan for Southern California Edison CalNev Substation and Transmission Line, Colton, CA
Inventory of Biological Resources and Mitigation Recommendations for Proposed 8,000-acre Development in Riverside County Agricultural Reserve

NATHAN GALE
Principal Scientist, FL*x*

EDUCATION AND CERTIFICATIONS

Ph.D., Geography, University of California, Santa Barbara, 1985.
M.A., Geography, University of California, Santa Barbara, 1980.
PWS, Certified Professional Wetland Scientist #1216, Society of Wetland Scientists, 1999.

SUMMARY OF QUALIFICATIONS

Dr. Gale has 23 years of experience managing and conducting multidisciplinary projects ranging from methodology development to applied environmental impact assessments, planning studies, and restoration programs. His management experience includes proposal preparation; contract negotiation and client relations; cost control and schedule monitoring; document production supervision; and quality assurance review. His specific technical work has involved experimental and sampling design; photographic documentation; and mapping of natural vegetation, sensitive species, environmental constraints, and land use. He also has field experience in quantitative vegetation sampling, environmental data collection, and wetland delineation. Dr. Gale is skilled in qualitative and quantitative data analysis for numerous applications including ecological and environmental impact assessment as well as mitigation and monitoring planning. He has been responsible for the preparation of NEPA/CEQA environmental documents, planning studies, and technical reports for the Department of Defense (DOD), the Department of Energy (DOE), the Department of Interior (DOI), and for state and local agencies. In addition, he has published extensively in the fields of geography, ecology, planning, and environmental studies.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower) and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites. Surveys were carried out during four field seasons in the years 2000, 2001, 2002, and 2003. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles County, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia*

californica (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune vegetation. Activities included botanical surveys, survival and growth surveys, photodocumentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB. U.S. Air Force and The Earth Technology Corporation. Technical advisor and senior data analyst for wetland creation, upland dune scrub habitat restoration, coast live oak revegetation, and vegetation monitoring for a five-year biological mitigation and monitoring program. Activities included initial planning, budgeting, methodology development, sampling design, vegetation sampling, data analysis, preparation and review of annual monitoring reports.

Guadalupe Oil Field Restoration. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Initial restoration planning, including background research, historical air photo assessment, and analysis of restoration alternatives at the Guadalupe Oil Field. Results from these tasks were used in the evaluation of potential restoration options, and to anticipate biological, hydrological, ecological, logistical, economic, and other issues associated with each restoration option.

Restoration of Coastal Dunes and Associated Wetlands in California. California Department of Fish and Game and Hagler Bailly Consulting, Inc. Principal scientist responsible for compiling and annotating a comprehensive bibliography of restoration and revegetation projects in coastal California, with an emphasis on coastal dune habitats and coastal wetlands.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Technical advisor responsible for developing strategy and task recommendations for the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Key aspects of the plan included an outline of steps for habitat protection, species and habitat monitoring, biological and ecological research, and the establishment of new populations.

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design and implementation of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The project included plant species identification, vegetation sampling, data analysis, photodocumentation, and report preparation.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company. Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation. Field biological surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal scientist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

EIS and Environmental Assessments. U.S. Air Force. Program manager and contract administrator, under a contract with the Strategic Air Command (SAC), for eight environmental assessments and one EIS for proposed USAF real estate, facility construction, and training actions. Impact analyses were conducted for the full range of environmental and socioeconomic issues; major areas of focus involved endangered species' habitats, cultural and historical resources, and hazardous waste sites.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

Oil and Gas Exploration and Facilities Development EIRs/EISs. Santa Barbara County and California State Lands Commission. Environmental analyst for EIRs/EISs of oil and gas development projects located offshore California.

Supplemental Environmental Impact Report for the 1990 Long Range Development Plan. University of California, Santa Barbara. Program manager for a supplemental EIR focussed on growth-related impacts to local school districts, and potential secondary environmental impacts to sensitive wetland habitats that could be caused by needed school facility expansion.

Biological Monitoring for Installation of CITS, VTS, South Base, and Tranquillon Mountain Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Foster Wheeler Environmental Corporation. Onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Surveys and Monitoring for Installation of Building 3000 Fiber-Optic Cable System, Vandenberg AFB. U.S. Air Force and System Technology Associates. Field surveys and onsite biological monitoring for cable installation activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring for Honda Ridge Road Repair and Point Sal Road Repair, Vandenberg AFB. U.S. Air Force, Tetra Tech, Inc., and Ace Engineering, Inc. Onsite biological monitoring for road repair activities to ensure avoidance of adverse impacts to sensitive biological and wetland resources.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the stabilization of oil wells for the Venoco State Lease 421 piers, and the AERA/Molino flowlines abandonment project.

MEMBERSHIPS

California Botanical Society; California Exotic Pest Plant Council; Society of Wetland Scientists; Society of Ecological Restoration; The International Mountain Society.

SELECTED PUBLICATIONS

Dr. Gale has been an author and collaborator on numerous academic publications, government research grant reports, and presentations at national and international professional conferences. In addition, he has contributed to environmental and planning documents. A summarized count of his work includes: Refereed Journal Articles - 28; Book Chapters - 5; Papers in Conference Proceedings - 3; Government Research Reports - 13; Contributions to Planning Studies - 44; Contributions to Environmental Documents - 55.

Journal Articles

"Coast Live Oak Revegetation on the Central Coast of California," (with A. Parikh), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with A. Parikh), *Restoration Ecology*, 6(1), 1998, 83-93.

"The Analysis of Class Dispersion Patterns Using Matrix Comparisons," (with L.E. Harvey and F.W. Davis), *Ecology*, 69(2), 1988, 537-542.

"Tests of Randomness: Unidimensional and Multidimensional," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Environment and Planning A*, 17, 1985, 373-385.

"Measuring Association Between Spatially Defined Variables: An Alternative Procedure," (with L.J. Hubert, R.G. Golledge, and C.M. Costanzo), *Geographical Analysis*, 17, 1985, 36-46.

"Unclassed Matrix Shading and Optimal Ordering in Hierarchical Cluster Analysis," (with W.C. Halperin and C.M. Costanzo), *Journal of Classification*, 1, 1984, 775-92.

Conference Proceedings

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and A. Parikh), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) Ecology, Conservation, and Management of Vernal Pool Ecosystems, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report,

Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with A. Parikh and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division of the AAAS, University of California, Santa Barbara, June 1992, p. 46.

Doug Gettinger
Habitat Restoration Specialist

EDUCATION / REGISTRATION

- California State Polytechnic University, Pomona, B.S., Ornamental Horticulture, 1980
- California State Polytechnic University, Pomona, B.S., Landscape Architecture, 1979
- California Pest Control Advisor, License No. 1369

PROFESSIONAL AFFILIATIONS

- California Agricultural Production Consultants Association
- California Invasive Plant Council
- Society for Ecological Restoration

EXPERIENCE SUMMARY

Mr. Gettinger has more than a decade of experience in biological construction monitoring and in the design, implementation, and monitoring of habitat restoration projects, including several landfill projects. His training in landscape architecture and ornamental horticulture, coupled with his experience working on large construction projects help bring habitat restoration and endangered species habitat creation projects to a successful conclusion. He also holds a California Pest Control Adviser License, which allows him to legally act as an expert and make recommendations for pest control. His project experience includes restoration of chaparral, coastal sage scrub, coastal salt marsh, freshwater marsh, limestone forest, riparian woodland, southern willow scrub, and oak woodland habitats implemented under agreements with various federal, state, and local agencies. He has experience working safely around the large earth-moving equipment found at various construction projects.

PROFESSIONAL ASSIGNMENTS

Biological Construction Monitoring Projects

- Biological construction monitor for Cannon Road Extension Project in Carlsbad, California through sensitive habitat containing wetlands habitat for the federally endangered least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western clapper rail (*Rallus longirostris*), as well as coastal sage scrub habitat for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica*). Prepared monthly project progress reports and reported permit violations to the agencies. Project included oversight of subcontractors performing paleontological monitoring and recovery, and construction noise monitoring.

- Biological monitor during two years of road construction through four miles of sensitive habitat for the Scripps Poway Parkway Extension Project in Poway, California. Located appropriate preserve habitat in the City and transplanted Coast Barrel Cactus (*Ferrocactus viridescens*) growing in the project right-of-way prior to impacts. Worked with City inspectors, surveyors, and the contractor

to insure that impacts stayed within permitted limits. Monitored erosion and sediment control implementation and maintenance, and revegetation planting and seeding.

. Biological construction monitor for the North Mission Valley Interceptor Sewer Project through wetland habitat along the San Diego River. Also monitored the removal of four acres of the invasive exotic giant reed (*Arundo donax*) infesting adjacent wetland mitigation site. Oversaw the transplanting of mature riparian trees and installation of the riparian mitigation plan.

. Worked with engineers performing geotechnical testing in the San Diego River for the Mission Valley Light Rail Transit Project Permitting Process. Directed drillers' activities to minimize impacts to native wetland habitat.

. Biological monitor for engineers taking geotechnical samples in and near wetland habitat for the federally-listed endangered San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*) and federally-listed threatened California Red-legged Frog (*Rana aurora draytonii*) on the West of Bayshore Parcel at San Francisco International Airport for the Bay Area Rapid Transit District (BART). Directed drillers' activities to avoid impacts to the San Francisco Garter Snake and California Red-legged Frog and prepared daily reports for submission to the U.S. Fish and Wildlife Service. Part of work was performed immediately adjacent to existing high volume, high speed rail line.

. Biological construction monitor for a creek widening project to increase channel capacity and reduce flooding in downtown Martinez, California. Work included overseeing a subcontractor to remove fish and western pond turtles (*Clemmys marmorata*) living in the project area and revegetating creek banks with native vegetation.

. Directed staff performing pre-construction surveys for federally-listed threatened California red-legged frog (*Rana aurora draytonii*) and nesting birds, and biological construction monitoring for permitted wetland impacts and initial land clearing at the Henry Ranch Project in San Ramon, California. Also oversaw and directed implementation of conceptual wetland mitigation pond plan, as well as other required enhancement measures.

Habitat Restoration Projects

. Designed a wetland mitigation plan, oversaw construction impacts and mitigation installation for the loss of wetland habitat associated with project development at Talone Lake in Oceanside, California. Project site includes habitat for the federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*). Assisted in preparation of a draft habitat management plan for the project and processed the 404 application with the U.S. Army Corps of Engineers and 1603 Streambed Alteration Agreement with the California Department of Fish and Game. Project included coastal sage scrub buffer zone around a wetland.

. Developed a wetland mitigation plan for 12 separate temporary wetland impact areas associated with the BART San Francisco International Airport Extension Project. Project site is habitat for the federally-listed endangered San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*) and the federally-listed threatened California Red-legged Frog (*Rana aurora draytonii*).

. Biological and horticultural monitor at the 92 acres Ocean Trails Restoration Project in Rancho Palos Verdes, California. The Ocean Trails project is restoring coastal sage scrub, southern cactus scrub, and coastal bluff scrub to ruderal and degraded native habitat. The restoration program is creating additional habitat for the federally-listed threatened coastal California gnatcatcher

(*Polioptila californica*), which is already expanding into the still developing habitat. Work was performed for the Sanitation Districts of Los Angeles County.

. Provided horticultural and botanical monitoring for the wetland habitat restoration project associated with the Puente Hills Landfill in Whittier, California. Also directed staff performing the required wildlife monitoring. The wetland restoration area is adjacent to the Puente Hills Landfill and also provides visual screening of the landfill for adjacent residents. Also provided consultation for coast live oak (*Quercus agrifolia*) mitigation being implemented on weedy mustard covered slopes adjacent to the landfill, coastal sage scrub restoration being attempted on the landfill's canyon fill slopes, and ornamental buffer landscape to provide visual screening.

. Biological construction monitor to protect sensitive habitat during project grading of the Olympic Training Center Boathouse Project in Chula Vista, California. Directed planting of the coastal sage scrub and wetland mitigation areas and project manager for biological monitoring during five-year monitoring program. Federally-listed threatened coastal California gnatcatcher (*Polioptila californica*) began foraging in coastal sage scrub mitigation area after two years.

. Provided project construction management, mitigation installation supervision, and biological monitoring at a large wetland mitigation project located in a drainage running through a golf course at Twin Oaks Valley Ranch in San Marcos, California.

. Took over management of biological monitoring at a failing wetland mitigation project on the San Diego River in Lakeside, California. Developed a remedial plan to address project deficiencies and received approval from the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Department of Fish and Game, and the City of San Diego. Oversaw plan's implementation, which resulted in the project's successful resolution within the last three years of its five-year monitoring period.

. Monitored project grading to minimize impacts to sensitive habitat and oversaw wetland and upland mitigation installation at the Home Depot in Encinitas, California. Project manager for biological monitoring during the five-year monitoring program. Project habitat types include salt marsh, freshwater marsh, riparian scrub, riparian woodland, chaparral, and coastal sage scrub.

. Developed an off-site mitigation and management plan for project related impacts to California tiger salamander (*Ambystoma californiense*) for the Ranch in Silver Creek Project in San Jose, California. Located a suitable off-site location at the Bosley Ranch for a California tiger salamander breeding pond and aestivation habitat on a cattle ranch being purchased for preservation by the East Bay Regional Parks District. William Lyon Homes provided funds to help complete the Bosley Ranch's purchase so it will preserve and expand the Park District's open space holdings. William Lyon Homes will also pay for pond construction, a five-year maintenance and monitoring program, and fund an endowment for long-term management.

. Designed a limestone forest revegetation plan for placement on top of a closed hazardous materials landfill on the Orote Peninsula at the U.S. Naval Station, Guam. The landfill site is in an environmentally sensitive location, abutting the ocean and bordering high quality limestone forest habitat on two sides. A portion of the landfill is within the Orote Ecological Reserve Area. The revegetation plan addresses failures that have occurred on the island by attempting traditional landfill plant cover with grasses by using ecologically appropriate native species. The native species will not require maintenance over the long-term, which will save money on maintenance. The revegetation plan was prepared as part of the larger landfill closure plan done under the Navy CLEAN program.

Working with project engineers, assisted with the design of a pilot study to test whether root growth from woody vegetation might impact a proposed landfill cap. The pilot study was done for the closed hazardous materials landfill on the Orote Peninsula at the U.S. Naval Station, Guam. Once the pilot study design was approved, oversaw implementation of the pilot study, which was installed by the landfill closure contractor. The pilot study was installed on a pad immediately adjacent to the landfill, replicating exact landfill conditions, with the exception of a shallower soil layer to amplify root interactions with the landfill cap. The pilot study showed that roots did not penetrate the highly compacted root minimization layer placed over the geosynthetic membrane. These results were similar to several other studies that have been done, and in line with expectations. The pilot study did reveal some problems with cap installation procedures that were addressed when the landfill cap was installed. Based on the pilot study results, plans are currently being prepared for implementation of the revegetation plan. The pilot study was done as part of the larger landfill closure plan done under the Navy CLEAN program.

- Developed a riparian mitigation plan for impacts in a coastal canyon being filled to stabilize landslides and prevent further property losses at Potrero Canyon in the Pacific Palisades neighborhood in Los Angeles, California. Made an extensive search for offsite mitigation alternatives in the area. Attended community workshops to explain mitigation and learn neighborhood concerns about the project. Plan was prepared for presentation to the California Coastal Commission.

Biological Monitoring Projects

- Performed final pre-construction surveys and prepared reports for two sensitive wetland and adjacent upland areas to document conditions prior to destruction. Areas are habitat for the federally-listed endangered San Francisco Garter Snake *(Thamnophis sirtalis tetrataenia*) and federally-listed threatened California Red-legged Frog (*Rana aurora*) at the West of Bayshore Parcel at San Francisco International Airport for the Bay Area Rapid Transit District (BART).

- Assisted with focused biological surveys to map vegetation communities and search for sensitive plant and wildlife species at a contaminated site. Surveys were the first stage in conducting an ecological risk assessment for the Santa Susana Test Facility, Ventura County, California.

- Assisted in focused biological surveys and helped prepare alternatives analysis for the environmental impact report for the San Diego County Water Authority Reservoir Program. Performed extensive surveys and mapping of coast live oak (*Quercus agrifolia*) and mesa oak (*Q. engelmannii*).

Other Projects

Supervised a brush management and summer holly (*Comarostaphylos diversifolia*) preservation program at a project on the rim of Los Peñasquitos Canyon Preserve, San Diego, California.

- Supervised the planting of native purple needlegrass (*Nasella pluchra*) plants in a preserve for the federal and State-listed endangered thread-leaf brodiaea (*Brodiaea filifolia*) in a preserve in San Marcos, California.

- Collected seed from several sensitive species, including San Jacinto Valley crownscale (*Atriplex coronata var. nutatior*), little mousetail (*Myosurus minimus ssp. apus*), dwarf peppergrass (*Lapidium latipes*), and woolly marbles (*Psilocarpus brevissumus*) on a Metropolitan Water District pipeline right-of-way prior to construction in Riverside County, California. Seed was sent to Rancho Santa Ana Botanic Garden for counting, cleaning, and storage. Later sewed seed in appropriate

locations along right-of-way after pipeline construction was completed. Also counted population and collected seed for Parish's brittlescale (*Atriplex parishii*) , a species formerly presumed extinct.

VIPUL JOSHI
BIOLOGIST

EDUCATION

- University of California, San Diego
- B.S., Evolution, Behavior, Ecology, 1997

EXPERIENCE SUMMARY

Mr. Joshi has 4 years professional experience in project management, permit acquisition, vegetation resource mapping, wetlands delineation, and focused surveys for federally-listed Quino checkerspot butterfly and vernal pool branchiopods.

PROFESSIONAL ASSIGNMENTS

Representative environmental projects include:

- **SR-125 South - Caltrans/CTV.** Provided support in preparation of environmental permit documents and permit negotiations. Conducted vegetation mapping, rare plant, and Quino checkerspot surveys for various mitigation site alternatives. Drafted conceptual revegetation and management plans for various mitigation sites.

- **Valley-Rainbow - CPUC.** Accumulated and analyzed data regarding potential biological impacts related to various project components throughout Riverside and San Diego Counties. Drafted Biolgoical Resources Technical Report to document existing conditions, potential direct, indirect, and cumulative effects, and determine significance pursuant to CEQA.

- **Otay Ranch Company - Chula Vista, California.** Provided biological surveys of various properties include vegetation mapping, rare plants surveys, wetlands delineations, fairy shrimp surveys, and Quino checkerspot surveys. Provided CEQA documentation, wetlands and endangered species permitting for various entitlement projects.

- **Salt Creek Gravity Sewer - City of Chula Vista, California.** Developed project alternatives permitting strategy with City and project engineers for 11-mile gravity sewer. Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys. Prepared biological technical report and EIR-level biological evaluation for CEQA compliance. Submitted and coordinated acquisition of all wetlands and endangered species permits, including identification of mitigation alternatives. Coordinated construction monitoring and permit compliance.

- **San Timeteo Creek - Yucaipa, California.** Provided baseline vegetation mapping, wetlands delineation, and rare plant surveys for study area.

- **LaBorde Canyon.** Provided baseline vegetation mapping and plant species inventory.

- **North Agua Hedionda Sewer Rehabilitation - City of Carlsbad, California.** Provide project management for sewer rehabilitation project adjacent to coastal lagoon. Assignments include ongoing coordination with engineering alternatives, permitting strategies, analysis of alternative impacts, CEQA documentation, mitigation identification, resource mapping, and project planning in terms of timing and budget.

- **Poway Creek Silt Removal - City of Poway, California.** Provide baseline surveys, project management, and permit acquisition for major creek silt removal. Assignments include identification of resource mapping, least impactive, feasible alternative with project engineer, CEQA compliance, wetlands permitting, and ongoing project planning.

- **Cielo del Norte - San Diego County, California.** Provided baseline vegetation and rare plant surveys. Drafted biological technical report and endangered species permitting strategy for 500-acre development in a critical preserve planning area. Provide project management for ongoing entitlement process.

- **Rilington Communities - San Diego County, California.** Provide project management capabilities for various entitlement processes for medium-scale residential developments throughout the County. Assignments include project planning, resource mapping, impact assessments, permit acquisition/negotiations, and mitigation identification.

- **Revegetation Monitoring - City of San Diego, California**. Assisted in the collection of data within revegetated wetlands in accordance with monitoring criteria of the City of San Diego.

PAUL LEMONS

Biologist

EDUCATION

- San Diego State University
  B.S. Biological Sciences, Emphasis in Ecology 2001

PROFESSIONAL CERTIFICATIONS

- Quino Checkerspot Butterfly Section 10(a)(1)(A) Recovery Permit
  (USFWS Federal Permit # TE051248-0)

EXPERIENCE SUMMARY

Mr. Lemons has a background in biology and environmental policy and regulation. As an undergraduate he worked as an intern at Mission Trails Regional Park in San Diego County. Paul assisted in the creation of a Habitat Conservation Plan for Mission Trails Regional Park in accordance with the City of San Diego and state guidelines.

Before working at Dudek and Associates, Inc. (Dudek), Mr. Lemons worked as an intern for the San Diego Regional Water Quality Control Board where his duties included processing and review of Section 401 Water Quality Certification Applications and California Environmental Quality Act (CEQA) documents.

Since joining Dudek, Mr. Lemons has been primarily involved with Biological monitoring and the preparation of Biological Technical Reports, Wetlands Mitigation and Monitoring Plans, and Environmental Permit Packages. Mr. Lemons was recently permitted to survey for the federally endangered Quino checkerspot butterfly, and will therefore be carrying out these surveys for future Dudek projects. In addition, Mr. Lemons has completed the requirements to survey for the federally threatened California gnatcatcher and expects to be permitted in the near future.

PROFESSIONAL ASSIGNMENTS

Mr. Lemons is currently managing, monitoring, report writing, and/or providing support on the following projects:

Carlsbad Fire Station, Carlsbad, CA. Project manager. Currently preparing Biological Resources Letter Report. Conducted general wildlife surveys and assisted with vegetation mapping.

Lusardi Creek at 4S Ranch, San Diego County, CA. Responsible for preparation of the environmental permit package for this project. Prepared and submitted complete permit applications to the Regional Water Quality Control Board for section 401 Water Quality Certification, California

Department of Fish and Game Section 1600 Streambed Alteration Agreement, and to the Army Corps of Engineers for Section 404.

Southern California Edison Project, San Bernardino, CA. Currently conducting general wildlife surveys along power lines in the San Bernardino Mountains that may be threatened by adjacent pine trees infected by bark beetle.

Rancho Mission Viejo Conservancy Area, Orange County, CA. Conducted supervised California gnatcatcher surveys within the project area, and prepared the Focused California Gnatcatcher Survey Report.

University Commons Development Project, Biological monitoring, Carlsbad, CA. Responsible for monitoring the clearing of native habitat to ensure clearing activities only occur within approved boundaries and that Best Management Practices are implemented.

Kim L. Marsden

Botanist/Biologist

As a biologist with more than ten years of experience, Ms. Marsden has successfully conducted a diverse range of botanical and zoological surveys, including focused searches for rare and endangered species in coastal, mountain and desert plant communities. She has developed excellent botanical skills from not only a broad range of field identification experiences throughout the southwestern United States and northwestern Mexico, but training in botanical laboratory techniques used for plant identification, as well. Ms. Marsden has extensive experience in the analyses of potential impacts to species and habitats from proposed development projects. She prepares and reviews technical reports, which provide alternatives recommendations to mitigate these impacts. She has a thorough working knowledge of regulatory issues and applicable laws including the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and the Clean Water Act as part of her resource agency experience working as a Botanist/Biologist for the California Department of Fish and Game, U.S. Fish and Wildlife Service, and through her project manager experience in the regulatory branch of the U. S. Army Corps of Engineers. Ms. Marsden has reviewed and commented on numerous proposed mitigation and monitoring plans for sensitive species. She is knowledgeable of, and skilled in, vegetation mapping, mitigation monitoring, and the design of habitat restoration plans. She also has extensive experience in conducting rare, threatened, and endangered animal surveys.

EDUCATION

Completed all required coursework for the Master's Program in Systematic Botany, San Diego State University, 1992-1994. Master's Research Topic: Systematics, ecology and natural history of Northwest American *Eryngium* species (Apiaceae).

Bachelor of Science, Biology, San Diego State University, 1992.
Associate of Science, Medical Laboratory Technology, San Diego Mesa College, 1988.

PUBLICATIONS

Marsden, Kim L. and Michael G. Simpson. 1999. *Eryngium pendletonensis* (Apiaceae), A New Species from Southern California. *Madroño*, 46:1, 61-64.

EXPERIENCE

1/01-present	Associate Resource Ecologist, California Department of Parks and Recreation, Southern Service Center, San Diego.

Design long-term monitoring studies to assess the status and condition of vegetation communities, exotic species infestations, and rare plant populations. Conduct vegetation and rare plant inventories within State Parks in southern California. Assess the impacts of maintenance and development projects on biological resources within state park units. Provide technical botanical expertise to Service Center staff when requested. Assist in project environmental clearance under CEQA, ESA, and CESA. Assist other resources section staff in biological survey work and data analysis when necessary.

1/00 –1/01 Associate Biologist in Botany, California Department of Fish and Game, Region 5, San Diego Office.

Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under Section 2835 of the Fish and Game Code (Natural Community Conservation Program). Coordinated with the U.S. Fish and Wildlife Service Habitat Conservation Program staff to ensure HCP conformity with the Federal Endangered Species Act and the California Fish and Game code and other state and federal laws.

9/97-1/00 Fish and Wildlife Biologist/Botanist-U.S. Fish and Wildlife Service, Branch of Habitat Conservation Planning, Ecological Services, Carlsbad Field Office.

Provided technical assistance in developing Habitat Conservation Plans to applicants/jurisdictions seeking take authorization under section 10 of the Endangered Species Act. Coordinated with California Department of Fish and Game Natural Community Conservation Program (NCCP) staff to ensure HCP conformity with the Endangered Species Act and the Fish and Game code.

Evaluated and commented on projects impacting U.S. Army Corps of Engineers' jurisdictional Waters of the United States pursuant to the Fish and Wildlife Coordination Act. Consulted and conferred with other federal agencies under section 7 of the Endangered Species Act (Act) to analyze effects of federal actions on species proposed for listing or listed as endangered, threatened under the Act.

Provided technical expertise to Field Office staff in evaluation of revegetation, restoration and enhancement projects of upland, riparian, and wetland habitats. Provided general botanical expertise to Field Office staff biologists when needed.

7/96-9/97 Botanist-U.S. Fish and Wildlife Service-Branch of Federal Projects, Ecological Services, Carlsbad Field Office.

Conducted complete biological surveys for plants and wildlife for impact assessments of proposed land and water development projects. Prepared biological technical reports, including analyses of project alternatives developed from the results of directed sensitive species and community surveys. Developed sampling protocols for vegetation communities; provided botanical expertise to staff biologists and made recommendations for resource protection and enhancement. Surveyed for, and monitored the status of, federal candidate, proposed, and listed plant and animal taxa. Assisted in amphibian and reptile pit-fall trapping survey efforts. Provided technical expertise to Field Office staff biologists for evaluation of revegetation, restoration and enhancement efforts of upland, riparian, and wetland habitats.

11/95-7/96 Biologist/Project Manager, U. S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office.

Project management, including evaluation of impacts to jurisdictional Waters of the United States, including wetlands, associated with permit requests pursuant to section 404 of the Clean Water Act, section 10 of the Rivers and Harbors Act, and section 103 of the Marine Sanctuaries Act. Processed permit applications, composed letters to applicants, evaluated compliance with permit conditions and coordinated with other agencies regarding proposed permit activities affecting biological, historical and water resources.

3/95-10/97 Botanist (Seasonal), Lake Cuyamaca Recreation and Park District, Julian, CA.

Project Manager of the Lake Cuyamaca downingia, Lake Cuyamaca larkspur, and Parish's meadowfoam monitoring program. Developed sampling and monitoring protocols for sensitive plant species. Coordinated rare plant monitoring activities in accordance with interagency Memorandum of Understanding guidelines, including mapping of rare plant populations using Geographic Information System (GIS) technology to assess annual boundary changes of plant subpopulations; prepared annual biological technical reports. Supervised and trained field personnel in established survey methodology; ensured thorough documentation of survey and monitoring activities through complete field notes.

KAMARUL MURI
Biologist

EDUCATION

University of California, San Diego
B.S., Ecology, Behavior and Evolution, 2001.

PROFESSIONAL CERTIFICATIONS

U.S. Fish and Wildlife Service
Quino Checkerspot Butterfly Section 10(a)(1)(A) Permit # TE051250-0

California Department of Fish and Game
Rare, Threatened and Endangered Plant Voucher Collecting Permit #05077

EXPERIENCE SUMMARY

Before working at Dudek & Associates, Inc. (Dudek), Mr. Muri earned a Bachelor of Science in Ecology, Behavior and Evolution from the University of California, San Diego. In his senior year at university, Mr. Muri learned the basics of computer programming and applied them towards constructing a computer model for anlayzing the use of wildlife corridors within fragmented habitats. Other computer modeling projects included single species population viability analyses.

Mr. Muri is a recent addition to Dudek's team and has been involved mainly in the analysis and preparation of biological documents in compliance with the California Environmental Quality Act (CEQA). Since arriving at Dudek, Mr. Muri has provided field support in conducting general biological surveys, focused protocol-level surveys for listed species, rare plant surveys and jurisdictional wetlands delineations.

PROFESSIONAL ASSIGNMENTS

Biological Resources Reports, Wetlands Delineation and Wetlands Permitting

- **Municipal Non-Potable Water Distribution System**. Yucaipa Valley Water District, Riverside County, California. Conducted vegetation mapping for a six-mile riparian corridor, biological reconnaissance of habitat along San Timoteo Creek to assess potential habitat enhancement opportunities, prepared quality assurance plan for approval by the U.S. Environmental Protection Agency, assisted in the preparation of biological reports for a joint Environmental Impact Report/Environmental Impact Statement.

- **Cathedral High School.** Catholic Diocese of San Diego, City of San Diego, California. Provided wetlands permitting and environmental compliance services for an ongoing educational development project.

- **Flood Channel Improvement Project**. Riverside County Flood Control and Water District, Riverside County, California. Provided assistance in delineating wetlands and conducting vegetation mapping. Prepared Section 401 and Section 404 permit applications and 1601 Streambed Alteration Agreement for impacts to waters of the U.S./State associated with improvements to an existing flood channel feeding the Perris Valley Channel.

- **Private Residence**. Orange County, California. Conducted vegetation mapping for a 5.8-acre property located along Live Oak Canyon in southern Orange County and assisted in surveys for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica californica*).

- **Focused Herpetological Trapping Program** - Conducted herpetological pitfall trapping to determine species composition and distribution of reptile species in La Borde Canyon, Riverside County, California.

- **Brown-headed Cowbird Trapping Program** - Conducted a trapping program to reduce nest parasitism of native bird species by controlling populations of non-native brown-headed cowbirds along San Marcos Creek in the City of Oceanside, California.

Biological Monitoring of Construction

- Provided biological monitoring services for the construction of the Salt Creek Sewer Interceptor project in the City of Chula Vista, California. Monitoring responsibilities included ensuring compliance with the California Environmental Quality Act, federal Endangered Species Act, Section 401 of the federal Clean Water Act and Section 1600 of the California Fish and Game Code. Sensitive species associated with the project included the federally-listed threatened coastal California gnatcatcher and the federally-listed endangered Quino checkerspot butterfly (*Euphydryas editha quino).*

- Providing biological monitoring services for the ongoing construction of the Rancho Santa Fe Road Realignment and Bridge Replacement project in the City of Carlsbad, California. Monitoring responsibilities included ensuring compliance with the California Environmental Quality Act, federal Endangered Species Act and Section 401 of the federal Clean Water Act and Section 1600 of the California Fish and Game Code. Sensitive species

associated with the project included the federally-listed threatened coastal California gnatcatcher.

- Provided biological monitoring services for various residential development projects in Subarea III of the City of San Diego Multiple Species Conservation Plan in the City of San Diego, California. Monitoring responsibilities included ensuring the proper implementation of standard construction best management practices (BMPs) to avoid and minimize construction-related impacts to sensitive habitat within the Multiple Habitat Planning Area. Tasks included weekly inspections of construction sites and coordination with staff from the City of San Diego's Environmental Analysis Section, Field Engineering Division and Mitigation and Monitoring Coordination.

Conservation Planning

- Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included researching potentially covered plant species.

ANUJA K. PARIKH
Principal Ecologist, FL*x*

EDUCATION AND CERTIFICATIONS

Ph.D., Plant Geography, University of California, Santa Barbara, 1989.
M.S., Geography, University of Bombay, India, 1981.
B.S., Zoology and Geology, University of Bombay, India, 1979.
PWS, Certified Professional Wetland Scientist #841, Society of Wetland Scientists, 1995.

SUMMARY OF QUALIFICATIONS

Dr. Parikh has 19 years of field and research experience in the areas of botany, plant ecology, wetlands, biogeography, and earth resources. Her work has included environmental baseline inventories and impact assessments, rare and endangered plant species surveys, revegetation and mitigation plans, restoration and monitoring of native upland and wetland habitats, and coast live oak revegetation studies. She has expertise in field vegetation sampling, plant species identification, wetland delineation, and the collection of physical environmental data. Using aerial photography and field surveys, she has prepared vegetation maps based on classification and quantification of plant communities in a variety of habitats; she also has mapped environmental constraints, incorporating data on sensitive species, natural habitats, and physiographic and man-made features. Dr. Parikh is experienced with experimental design as well as processing and analyzing ecological data using statistical and graphics software.

EXPERIENCE

Rare Plant and Vegetation Surveys and Mapping, Newhall Ranch/Valencia Company Project Sites, Los Angeles and Ventura Counties, CA. Newhall Land and Farming Company, URS Corporation, Impact Sciences, Inc., and Dudek and Associates, Inc. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower) and *Helianthus* sp. (sunflower), vegetation surveys and mapping of plant communities, and report preparation for various sites. Surveys were carried out during four field seasons in the years 2000, 2001, 2002, and 2003. Participation in the development of a spineflower management plan, preserve design, and associated research activities.

Rare Plant and Vegetation Surveys and Mapping, Los Angeles County, CA. Natural Resource Consultants. General rare plant surveys and concentrated surveys for *Chorizanthe parryi* var. *fernandina* (San Fernando Valley spineflower), *Dodecahema leptoceras* (slender-horned spineflower), *Orcuttia californica* (California Orcutt grass), and *Navarretia fossalis* (spreading navarretia), vegetation surveys, and report preparation for three sites in the year 2003.

Restoration Planning and Implementation, Former Guadalupe Oil Field, San Luis Obispo County, CA. Unocal Corporation and Jordan Environmental Services. Preparation and implementation of site-specific restoration plans, including the development of revegetation specifications, monitoring methods, performance criteria, and performance evaluation. Development of general mitigation and restoration success criteria, including sampling design, data collection, statistical data analysis, and reporting for selected reference wetlands for future comparison with wetland mitigation and restoration sites. Participation in activities related to uplands and wetlands habitat restoration with the Restoration Working Group, comprising regulatory agency representatives and Unocal consultants, for the long-term Guadalupe Restoration Project.

Vegetation and Rare Plant Surveys and Wetlands Delineations, Ventura and Los Angeles Counties, CA. Impact Sciences, Inc. Vegetation surveys and mapping of plant communities, rare plant surveys, field wetland surveys, delineation of jurisdictional wetlands, and report preparation for more than 30 sites in various locations in Ventura and Los Angeles counties.

Peacekeeper Rail Garrison Mitigation Program, San Antonio Terrace, Vandenberg AFB, CA. U.S. Air Force and The Earth Technology Corporation. Project biologist responsible for directing, planning, and implementing biological field activities related to wetlands creation, upland habitat restoration, coast live oak revegetation, and vegetation monitoring for all mitigation and restoration sites.

Recovery Plan for Two Federally Endangered Plant Species. U.S. Fish and Wildlife Service. Ecologist and principal author responsible for background research and all botanical elements of the recovery plan for marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*).

Implementation of Recovery Activities for Two Federally Endangered Plant Species. California Department of Fish and Game and University of California. Research on species biology and ecology, plant propagation, experimental establishment of new populations, and monitoring of existing and new populations of marsh sandwort (*Arenaria paludicola*) and Gambel's watercress (*Rorippa gambelii*). Reporting of species and habitat status and progress of recovery activities.

Rare Plant Census. All American Pipeline, L.P. Rare plant monitoring census for Gaviota tarplant (*Hemizonia increscens* ssp. *villosa*) in permanent plots established at Gaviota, CA.

Ventura River Estuary Enhancement Project, Ventura County, CA. California Department of Parks and Recreation. Design and implementation of a five-year vegetation monitoring program for restoration efforts at Emma Wood State Beach. The project involved monitoring four vegetation types: willow-cottonwood forest, saltbush scrub, dune scrub, and foredune

vegetation. Activities included botanical surveys, survival and growth surveys, photodocumentation, data collection and comparative analysis of natural and revegetated areas, evaluation of exotics eradication, and recommendations for ongoing restoration.

Santa Barbara County Oak Restoration Program. University of California, Santa Barbara. Plant identification and vegetation monitoring in savanna and woodland habitats of blue oak, valley oak, and coast live oak, for the long-term assessment of cattle grazing impacts on oak seedling recruitment at Sedgwick Ranch, Santa Barbara County, CA.

Vernal Pool Restoration Monitoring, Isla Vista, CA. Isla Vista Recreation and Park District. Vegetation monitoring, data analysis, and publication preparation for a 10-year assessment of restored and created vernal pools at the Del Sol Open Space and Vernal Pool Reserve.

Plant Surveys and Wetland Delineations for Five Land Parcels, Isla Vista, CA. County of Santa Barbara Planning and Development. Field surveys and report preparation for botanical and wetland resources, including jurisdictional wetland delineations and mapping, in coastal mesa vernal pool habitat along Del Playa Drive, Isla Vista.

Rare and Endangered Plant Species Surveys. Metropolitan Water District and ERC Environmental and Energy Services Co. Plant species identification and sensitive plant species surveys at proposed reservoir and mitigation sites (Potrero Creek, Harford Springs, Crown/Rawson Valleys, Motte Rimrock Reserve, Domenigoni Valley, Santa Rosa Plateau Preserve, Lake Skinner, and Vail Lake) for the Metropolitan Water District's Eastside Reservoir Project, Riverside County, CA.

Vegetation Mapping and Plant Species Surveys. Santa Barbara County, CA. Vegetation mapping using aerial photographs of riparian communities along the Santa Ynez River, Santa Barbara County; field vegetation and topographical data collection from transects, species identification, rare and endangered plant species surveys, and report preparation for the County Flood Control District.

Rare and Endangered Plant Species Surveys. California Department of Water Resources. Rare and endangered plant species identification and mapping along a proposed aqueduct route in the Lompoc and Lake Cachuma areas in Santa Barbara County, and near Santa Margarita, San Luis Obispo County; field verification, ground truthing and mapping of vegetation communities along the Santa Ynez River, CA.

Floristic and Vegetation Surveys. U.S. Department of Agriculture, Forest Service. Preparation of floras and vegetation surveys in the Los Padres National Forest at Mt. Pinos, a lower subalpine community in Ventura and Kern counties, and at Alder Creek Botanical Area, Monterey County,

CA. Identification of plant species and collection of vegetation and site data in permanent plots established in blue oak woodland in San Luis Obispo County, CA, as part of a Forest Service project on vegetation and habitat inventory and classification.

Wetland Vegetation Surveys, Mapping, and Monitoring. Dames & Moore. Vegetation mapping using aerial photographs, calculations of riparian habitat acreages, and field botanical surveys for a land development project along the Santa Clara River, Los Angeles County, CA. Biological construction monitoring for an archaeological site investigation in the Los Carneros wetlands, Goleta, CA. Field surveys and mapping of wetlands and vernal pools at Beale AFB, CA.

Rare and Endangered Plant Species Surveys and Vegetation Mapping. Jones and Stokes Associates, Inc. Field surveys for rare and endangered plant species at the proposed Los Vaqueros Reservoir site near Livermore, Contra Costa and Alameda counties, CA, and along ephemeral drainages near Taft in the Central Valley, Kern County, CA, for a project involving clean-up of oil and brea deposits. Habitat mapping and field surveys of riparian vegetation and plant species on transects along the Lower Ventura River, for an aquatic biology survey.

Ecological Survey Reports for Candidate Research Natural Areas. U.S. Department of Agriculture, Forest Service. Field work, literature reviews, and document preparation for the San Emigdio Mesa and Sawmill Mountain Candidate Research Natural Areas, Los Padres National Forest, Ventura County, CA.

Restoration Plan, Naval Base Ventura County, Port Hueneme Site, CA. Naval Base Ventura County and The Environmental Company. Field visits and preparation of a habitat protection and restoration plan for four special interest natural areas.

Biological Surveys and Wetlands Delineation for the National Reconnaissance Office (NRO) Campus, Vandenberg AFB. U.S. Air Force and Titan Corporation. Field biological surveys, jurisdictional wetlands delineation, and preparation of an addendum to the environmental assessment for The General Plan for the Cantonment Area of the base.

Controlled Burn Monitoring, Vandenberg AFB. U.S. Air Force and Museum of Systematics and Ecology, University of California, Santa Barbara. Pre-burn monitoring of vegetation and plant species in coastal sage scrub and chaparral at two prescribed burn sites, South Vandenberg AFB.

Restoration Plans for Installation of VTS Fiber-Optic Cable System, Honda Ridge Road Repair, and El Rancho Road Bridge Project, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Preparation of restoration plans including sections on ecological background, revegetation measures, monitoring and maintenance methods, performance criteria for assessing success, and restoration schedule for sites at North and South Vandenberg AFB.

Implementation of Restoration Plans, South Base and VTS Fiber-Optic Cable Systems, Vandenberg AFB. U.S. Air Force and Foster Wheeler Environmental Corp. Native plant species restoration, long-term monitoring, and restoration evaluation at four sites at Vandenberg AFB, CA.

Integrated Natural Resources Management Plan, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal ecologist responsible for preparing sections on existing conditions, issues of concern, and management objectives for vegetation, wildlife, and wetland resources for a basewide five-year plan.

Natural Resources Surveys and Environmental Assessments, Vandenberg AFB. U.S. Air Force and Tetra Tech, Inc. Principal environmental scientist responsible for conducting field surveys and preparing report sections for vegetation, wildlife, and wetland resources for 17 environmental assessments of facility and infrastructure development projects, and for an EIS on San Antonio Creek.

Natural Resources Management Plans. U.S. Air Force and Higginbotham/Briggs & Associates. Participation in data collection, field visits, agency coordination, document preparation and review for Natural Resources Management Plans prepared for Kaena Point Satellite Tracking Station, HI, and Onizuka AFB, CA.

Biological Monitoring, Environmental Quality Assurance Program (EQAP), Santa Barbara County, CA. Storrer Environmental Services. Biological monitoring for the Level (3) fiber-optic cable installation project, the All-American Pipeline relocation at Gaviota Creek, and the stabilization of oil wells for the Venoco State Lease 421 piers.

Goleta Revitalization EIR/EIS. County of Santa Barbara Planning and Development. Wetland delineations at sixteen creek crossings and plant surveys for street extensions, bikepaths and a multipurpose trail.

UCSB Campus Lagoon Wetland Restoration. The Herbarium, Museum of Systematics and Ecology, University of California, Santa Barbara. Design of a five-year vegetation monitoring program for wetland plant communities restored at the UCSB Campus Lagoon, Santa Barbara County, CA, as required by the Streambed Alteration Agreement of the California Department of Fish and Game. The monitoring project included plant species identification, vegetation sampling, data analysis, photodocumentation, and report preparation.

Vegetation Surveys and Analysis. The Herbarium, Department of Biological Sciences, University of California, Santa Barbara. Plant species identification and vegetation sampling in upland and wetland areas for baseline data inventory of botanical resources and rare plants at Fish Slough,

Inyo and Mono counties, CA. Project design and field surveys of topography, riparian vegetation, and plant species in the Ventura River estuary, Ventura County, CA; computer graphics, analysis, and document preparation of environmental relationships and distribution of species and vegetation communities. Computer analysis for a project on the botanical wetland resources of the Carpinteria salt marsh, Santa Barbara County, CA.

Wetlands Management Plan. Department of Geography and Campus Wetlands Committee, University of California, Santa Barbara. Field and literature surveys of hydrology and sedimentation of the campus-owned wetland resources in Devereux Slough and the Storke Campus wetlands.

Watershed Surveys. U.S. Department of Agriculture, Forest Service. Geomorphological, botanical, and hydrological field work in preliminary watershed surveys in Santa Barbara and Ventura counties, CA.

Research Activities. Department of Geography, University of California, Santa Barbara. Sampling and monitoring regeneration of tree and herbaceous species in the riparian zone of a chaparral watershed recovering from wildfire (N. Fork Matilija Creek, Ventura County); topographic channel surveys, computer plotting, ecological and botanical field, laboratory and greenhouse experiments, literature review, and data analysis. Vegetation sampling, inventory and analysis, and topographical surveys in chaparral ecosystems and oak woodlands in Burton Mesa chaparral, Santa Barbara County. Field sampling in coniferous forests of the Mendocino National Forest Reserve, CA.

MEMBERSHIPS

California Native Plant Society; Society of Wetland Scientists; Society of Ecological Restoration; California Botanical Society.

SELECTED PUBLICATIONS AND REPORTS

"Coast Live Oak Revegetation on the Central Coast of California," (with N. Gale), *Madroño*, 45(4), 1998, 301-309.

"Vegetation Monitoring of Created Dune Swale Wetlands, Vandenberg Air Force Base, California," (with N. Gale), *Restoration Ecology*, 6(1), 1998, 83-93.

"Review of Ten Years of Vernal Pool Restoration and Creation in Santa Barbara, California," (with W.R. Ferren Jr., D.M. Hubbard, S. Wiseman, and N. Gale), in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Eds.) Ecology, Conservation, and Management of Vernal Pool

Ecosystems, Proceedings from a 1996 Conference, California Native Plant Society, Sacramento, CA, 1998, 206-216.

"Peacekeeper Rail Garrison and Small ICBM Mitigation Program, San Antonio Terrace, Vandenberg AFB, California—Annual Wetlands Monitoring Report, Annual Upland Monitoring Report, Year 5," Prepared for the U.S. Department of the Air Force, Detachment 10, Space and Missile Systems Center, San Bernardino, CA, February 1996.

"Vegetation Monitoring of Created Wetland Sites on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale), in M.C. Landin (Ed.) Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetlands Science, Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, 1995, 153-55.

"Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)," (with N. Gale), U.S. Fish and Wildlife Service, Ventura, CA, August 1994.

"Wetland Creation and Vegetation Monitoring in a Stabilized Sand Dune Ecosystem, San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in M.C. Landin (Ed.) Proceedings of the 13th Annual Meeting of the Society of Wetland Scientists (SWS), New Orleans, LA, 1993, 368-76.

"First-Year Vegetation Monitoring of Created Wetlands on the San Antonio Terrace, Vandenberg Air Force Base, California," (with N. Gale and T. Waddell), in A.E. Leviton and M.L. Aldrich (Eds.) Proceedings of the Pacific Division, American Association for the Advancement of Science, University of California, Santa Barbara, June 1992, p. 46.

"Biotic Inventory and Ecosystem Characterization for Fish Slough, Inyo and Mono Counties, California," (with the Fish Slough Research Team), Report to State of California, The Resources Agency, Department of Fish and Game, by the Departments of Biological Sciences, Geography, and Geological Sciences, University of California, Santa Barbara, June 1991.

"Ecology of a Mediterranean-Climate Estuarine Wetland at Carpinteria, California: Plant Distributions and Soil Salinity in the Upper Marsh," (with R. Callaway, S. Jones, W. Ferren), *Canadian Journal of Botany*, 68, 1990, 1139-1146.

"Botanical Resources at Emma Wood State Beach and the Ventura River Estuary, California: Inventory and Management," (with W. Ferren, M. Capelli, D. Magney, K. Clark, and J. Haller), Report to the State of California Department of Parks and Recreation, Environmental Report No. 15, The

Herbarium, Department of Biological Sciences, University of California, Santa Barbara, August 1990.

"UCSB Campus Wetlands Management Plan, Part II—Technical Report—Hydrology, Water Quality, and Sedimentation of West and Storke Campus Wetlands," (with F. Davis, D. Theobald, and R. Harrington), Report to the California Coastal Conservancy and Campus Wetlands Committee, University of California, Santa Barbara, CA, 1990.

"Recovery of the Chaparral Riparian Zone After Wildfire," (with F. Davis, E. Keller, and J. Florsheim), Proceedings of the California Riparian Systems Conference, September 22-24, 1988, Davis, CA, Protection, Management, and Restoration for the 1990s, Gen. Tech. Rep. PSW-110, U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, 1989, 194-203.

"Plant Communities and Flora of the Proposed Botanical Reserve on Mt. Pinos, Ventura and Kern counties, CA," (with D. Capralis), Survey Report, U.S. Department of Agriculture, Forest Service, Los Padres National Forest Headquarters, Goleta, CA, August 1988.

"Terrestrial Vegetation of Rattlesnake Canyon," (with F. Davis), Proceedings of the Chaparral Ecosystems Research Conference, Santa Barbara, CA, Report No. 62, California Water Resources Center, University of California, Davis, CA, 1986, 13-17.

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Education
B.Sc. in Biology, specializing in Botany;
University of California, Riverside. June 1975.

Employment

1. **U.S. Department of the Interior, Bureau of Land Management (Riverside and Bakersfield Districts and California Desert Plan Staff).** Aug. 1975 to Apr. 1978 During this period I held positions as a Wildlife Biologist, Natural Resource Technician, and Range Conservationist and worked on the following projects:

   California Desert Plan
   Geothermal Energy Leasing Environmental Impact Statements
   - East Mesa
   - N. Salton Sea
   - Red Mountain
   - Yuha Basin

   McCain Valley Habitat Management Plan
   Owens Valley Range Program
   Sun Desert Transmission Line E.I.S.

   In the course of these projects I conducted extensive field surveys of vegetation and wildlife in the desert of southern California and in the Owens Valley.

2. **University of California, Riverside. Dept. of Biology.** Staff Research Associate and resident biologist at the James Reserve in the San Jacinto Mountains of Riverside County California. April 1978 to Sept. 1979. While at the James Reserve I surveyed the flora and fauna of the San Jacinto Mtns. and began the compilation of a list of the plants of the reserve, which was later completed in cooperation with Ken Berg, my successor.

3. **University of California, Riverside. Dept. of Botany & Plant Sciences.** Since September 1979 I have been Museum Scientist and curator of the Herbarium. This has involved extensive work with the flora of the southwestern U.S. and adjacent areas. I

have identified literally tens of thousands of plant specimens and have enlarged the UCR collection to ten times its former size. I have personally collected over 24,000 plant specimens in western North America. As a result of my work at the herbarium, I have come to be extremely familiar with the flora of southern California and can identify the overwhelming majority of plant species from this area on sight.

Additional Experience

I have contributed botanical/biological inventories for the following projects in California. This list is not comprehensive, but is representative.

Imperial Co.
Botanical Survey for U.S. Navy, Chocolate Mtns. Aerial Gunnery Range. 1988-1991.

Kern Co.
Biological Survey for a parcel near Rosamond, prepared for Land Concepts, Inc. 1988.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey of the Wind Wolves Preserve (San Emigdio Ranch), prepared for the Wildlands Conservancy. In progress.

Los Angeles Co.
Botanical Survey for Portuguese Bend Land Use Plan, prepared for England and Nelson Environmental Consultants. 1976.

Botanical survey of El Segundo Dunes, for L.A. International Airport, through Agresearch, Inc. 1987-1988.

Botanical surveys for several projects in the Lancaster vegetation management zone, prepared for the Dept. of Community Development, City of Lancaster. 1988-1989.

Orange Co.
Botanical survey for Land Use Plan for the Silverado-Santiago area of the Santa Ana Mtns., prepared for England & Nelson Environmental Consultants. 1976.

Riverside Co.
Botanical survey for the Riverside Co. Southwest Territory General Plan, for Riverside Co. Planning Dept. 1977.

Botanical survey for the Army Corps of Engineers Whitewater Flood Control Project. 1980.

Botanical Survey for Kacor Realty Wolf Valley Development, prepared through L. LaPré, consultant. 1981.
Botanical survey of the U. C. Motte Reserve near Perris. 1982.

Botanical survey of 500 ac. property near Murrieta, prepared for P. Principe, consultant. 1988.

Botanical survey of the Nature Conservancy Oasis de Los Osos Preserve. 1985-1988.

Biological Survey for Proposed Sanderson Ave. Bridge and Realignment, near San Jacinto, prepared for Myra L. Frank and Associates. 1990.

Rare plant Survey for the Coachella Valley Multi-Species Habitat Conservation Plan, prepared through Thomas Olson & Associates. 1995.

Botanical Survey of a pipeline route along the San Jacinto River, prepared through KDJ and Associates. 1996.

Botanical Survey of the Shipley Multi-species Reserve at Lake Skinner. In progress.

San Bernardino Co.
Biological survey for Big River Development, Colorado River near Parker. 1980.

Botanical Survey for Cactus Hill Mine, Ivanpah Mtns, prepared for J. McMains, consultant. 1985.

Biological survey of 640 ac. parcel near Pioneertown prepared for The Nature Conservancy. 1986.
Botanical Survey for Don Brown Racing Facility, Cajon Pass area. 1986.

Botanical Survey for Hart Mine expansion, Mojave Desert, prepared for J. McMains, consultant. 1986.

Scoping Report for Santa Ana River Resource Management Plan, prepared for the County of San Bernardino Dept. of Environmental Public Works. 1987.

Biological survey for Devil Canyon Powerplant expansion, prepared for the California Dept. of Water Resources. 1987.

Botanical survey for Glen Helen Sheriff's Academy expansion, prepared for the San Bernardino County Sheriff's Dept. 1987.

Biological Survey for the Daley Transit Mix Property near Ft. Irwin, Mojave Desert. 1988

Botanical Survey for proposed Davis Ranch Mine, Cajon Pass, prepared for Weber & Weber Mining Consultants. 1989.

Botanical Survey for Silver Peak Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for Cajon East (Cleghorn) Mine Expansion, prepared for Weber & Weber Mining Consultants. 1990.

Botanical Survey for National Can Parcel, Verdemont, prepared for McClelland Associates. 1990.

Biological Survey of Birmingham Ranch, prepared for the City of Yucaipa. 1992.

Biological Survey of Porter Ranch, prepared for the City of Yucaipa. 1993.

Biological Survey of the Yount/Mitchell property near Yucaipa, prepared for Robin Isakson & Associates. 1993.

Biological Survey of 100 acre property in Yucaipa, prepared for George Polycrates and Associates. 1996.

Botanical Survey of the central Avawatz Mtns., Mojave Desert, prepared for Gordon F. Pratt, consulting entomologist. 1997.

Outside of California I have done extensive field work and made numerous plant collections throughout the southwestern U.S., but particularly in Nevada and Arizona. I have also worked extensively in Mexico and am presently involved in three floristic projects in that country. I spent 12 weeks doing botanical survey work in Costa Rica during 1995 and 1996.

In addition to the above, I regularly make plant identifications (including fossils) for professional biological consultants, for scientific researchers, and for the general public. I commonly make plant identifications for biological consultants, and over the years have literally made thousands of

such determinations. I have identified plants on one or more occasions for the following Riverside County Qualified Environmental Consulting Firms and have done so regularly for several of them (*):

AMEC Earth & Envir., Inc.*
Beaman Biological Consulting
Biological Resource Specialists
Campbell Biological Consulting
CH2M Hill*
David E. Bramlet
Glen Lukos Assoc.
Harmsworth Assoc.
James Cornett Ecol. Cons
Joan R. Callahan
Kelly Volansky*
Ken Osborne
LSA Assoc.*
Natural Resource Assessment, Inc.*
P. & D. Environmental*
PCR Inc.
Principe and Assoc.
San Bernardino Co., Museum
Statistical Research Inc.
Ted Rado
TeraCor Resource Mgmt.*
TetraTech
Thomas Olsen & Assoc. *
Tierra Madre Connsultants*
Tom Dodson & Assoc.*
VHBC Consulting
W.D. Wagner
White & Leatherman*

I am generally recognized as one of the foremost authorities on the flora of Southern California and am regularly contacted by the US Fish & Wildlife Service and California Dept. of Fish and Game for information on the status and distribution of threatened and endangered plant species. In particular, I was queried regularly about species covered by the Riverside County MSHCP. I am regularly called upon to identify plant fragments which represent evidence in criminal cases.

Publications

Boyd, S. and A.C. Sanders. 1999. "Noteworthy Collections, California – *Dicentra chrysantha, Euphorbia anramsiana, Holocarpha heermannii*, Madroño 46 (2): 112.

Costea, M., A.C. Sanders & J. G. Waines. 2001. Preliminary results toward a revision of the *Amaranthus hybridus* species complex (Amaranthaceae) Sida 19 (4): 931-974

Costea, M., A.C. Sanders & J. G. Waines. 2001 Notes on some little known *Amaranthus taxa* (Amaranthaceae) in the United States Sida 19 (4): 975-992.

Costea, M., A.C. Sanders & J. G. Waines. 2002? Amaranthus Aliso In press

Cudney, D., C. Bell & A. C. Sanders. 1997. Weedy spurges in California, U. C. Extension Circular. Revised 2002.

Friedman, S. L., T. R. Van Devender, V. W. Steinmann, A. C. Sanders, P. D. Jenkins, S. A. Meyer, A. L. Reina Guerrero, D. A. Yetman, R. S. Felger & R. A. Lopez Estudillo. 1996. "Noteworthy Collections, Sonora, Mexico -- *Brickellia brandegei, Cordia globosa, Bromelia alsodes, Selenicereus vagans, Capparis flexuosa, Ipomoea imperati, Operculina pennatifida, Doyera emetocathartica, Momordica charantia, Bergia texana, Caesalpinia sclerocarpa, Mimosa asperata, Pholisma culiacanum, Nesaea longipes, Malpighia glabra, Bastardia viscosa, Okenia hypogea, Oenothera drummondii var. thalassaphila, Ophioglossum nudicaule, Luziola gracillima, Panicum antidotale, Tridens eragrostoides, Amyris balsamifera, Capraria biflora, Solanum azureum, Citharexylum scabrum, Lippia graveolens*", Madroño 43(4):532-538.

Hrusa, F., B. Ertter, A. Sanders, G. Leppig, E. Dean. 2002? Catalogue of non-native vascular plants occurring spontaneously in California beyond those addressed in The Jepson Manual, Part 1. Madrono, in press.

Jones, C. E., A. C. Sanders, et al. 1979. "Noteworthy Collections, California -- *Physalis lobata*, Madroño 29 (2): 101.

Krantz, T. P., R. F. Thorne & A. C. Sanders. 2003?, A Flora of the San Bernardino Mountains, California, nearing completion.

Minnich, R. A. and A. C. Sanders, 2000, Sahara Mustard (*Brassica tournefortii*), in California's Wildland Weeds: Identification and Control, C. Bossard, J. Randall, & M. Hoshovsky, eds, University of California Press

Sanders, A. C., 1996. "Noteworthy Collections, California -- *Acrachne racemosa, Aegilops cylindrica, Atriplex mulleri, Baileya multiradiata, Bromus secalinus, Cenchrus ciliaris, Centaurea diffusa, Centaurea maculosa, Ceratonia siliqua, Chloris truncata, Cynanchum louiseae, Ephedra funerea, Eragrostis curvula var. conferta, Fatoua villosa, Linanthus orcuttii, Matricaria globifera, Melica californica, Melissa officinalis, Panicum antidotale, Panicum maximum, Pistacia atlantica, Schinus polygamus, Schoenus nigricans, Scribneria bolanderi, Senna obtusifolia, Solanum mauritianum, Triteleia hyacinthina*", Madroño 43(4):524-532.

Sanders, A. C., 1997. "Noteworthy Collections, California -- *Gaura parviflora, Crepis tectorum*", Madroño 44 (3) 306-307.

Sanders, A.C. 1998. Polygonaceae in Martin, P., et al (revised & ed.). 1998. Gentry's Río Mayo Plants: the tropical deciduous forest & environs of northwest Mexico, University of Arizona Press.

Sanders, A.C. 1999. Invasive Exotics in California: a Perspective from Inland Southern California. In: M. Kelly, E. Wagner, and P. Warner (eds.). Proceedings of the California Exotic Pest Plant Council Symposium. Vol 4: 1998. Pp. 7-10.

Sanders, A. C. 2003?, "A Flora of the Box Springs Mountains and Vicinity, Riverside and San Bernardino Counties, California", Crossosoma, in preparation.

Sanders, A. C., 2003?. "Noteworthy Collections, California --*Allium vineale, Celtis sinensis, Cestrum nocturnum, Colutea arborescens, Crepis nana, Cynosurus echinatus, Desmodium tortuosum, Eruca vesicaria var. sativa, Gilia maculata, Gnaphalium purpureum, Gypsophila elegans, Horkelia cuneata ssp. puberula, Leonotus nepetifolia, Nerium oleander, Phaseolus filiformis, Pinus attenuata, Pinus jeffreyi, Rhamnus alaternus, Salvia reflexa, Ziziphus obtusifolia*", Madroño, submitted.

Sanders, A. C., D. L. Banks & S. Boyd , 1997 "Rediscovery of *Hemizonia mohavensis Keck* (Asteraceae) and addition of two new localities", Madroño 44 (2): 203-210.

Sanders, A. C. and S. Boyd, 1996. "Noteworthy Collections, California, -- *Brassica fruticulosa*", Madroño 43(4):523-524.

Sanders, A.C. and S. Boyd. 1999. "Noteworthy Collections, California, -- *Chloris truncata, Galium parisiense, Ranunculus testiculatus*", Madroño 46(2):113.

Sanders, A. C. and D. Cudney, 1991. "Key to the Families of Weeds of the West", in Weeds of the West, T. D. Whitson, ed., Western Society of Weed Science.

Sanders, A. C. and D. Koutnik, 1997. "Noteworthy Collections, California, -- *Euphorbia dendroides, E. esula, E. hirta, E. nutans, E. oblongata, E. revoluta, E. terracina*", Madroño 44(2): 203-210.

Skinner, M. W., D. P. Tibor, R. L. Bittman, B. Ertter, T. S. Ross, S. Boyd, A. C. Sanders, J. R. Shevock & D. W. Taylor, 1995. "Research Needs for Conserving California's Rare Plants", Madroño 42(2): 211-241.

Van Devender, T. R., A. C. Sanders, R. K. Wilson, & S. A. Meyer. "Vegetation, Flora, and Seasons of the Rio Cuchujaqui, A Tropical Deciduous Forest near Alamos, Sonora, Mexico", in The Tropical Deciduous Forest of the Alamos, Sonora, Region: Ecology and Conservation of a Threatened Ecosystem, ed. by R. H. Robichaux.

Van Devender, T. R., A. C. Sanders, V. W. Steinmann, R. K. Van Devender, S. A. Meyer, S. L. Friedman, J. F. Wiens, D. A. Yetman, P. D. Jenkins, E. Lopez-Saavedra, R. A. Lopez-Estudillo & J. D. Freeh, 1995. "Noteworthy Collections, Sonora, Mexico -- *Blechum pyramidatum, Begonia palmeri, Acmella oppositifolia, Blumea viscosa, Elephantopus spicatus, Eupatorium odoratum, Pectis uniaristata, Cuscuts boldinghii, C. potosina, Ipomoea meyeri, Merremia quinquefolia, Cyperus difformis, Euphorbia ocymoidea, Bothriochloa pertusa, Bouteloua alamosana, Desmodium scopulorum, D. scorpiurus, Mimosa diplotricha, Phaseolus lunatus, Polypremum procumbens, Passiflora suberosa, Piper jaliscanum, Crusea coronata, C. psyllioides, Diodia sarmentosa, Hedyotis vegrandis, Anemia affinis, Nicotiana plumbaginifolia, Phylla strigulosa*", Madroño 42 (3): 411-418.

Vasek, F. C. & A. C. Sanders, 1983. "Distribution of *Polygala acanthoclada*", Madroño 30 (3): 193-194.

White, S. and A. C. Sanders, 1997. "Clarification of Three Camissonia Boothii Subspecies' Distributions in California", Madroño 44 (1): 106-112

White, S., A. C. Sanders & M. Wilcox 1996. "Noteworthy Collections, California, -- Androstephium breviflorum, Claytonia lanceolata, Nicotiana acuminata, Ranunculus scleratus, Madroño 43 (2): 334-335.

Darren Smith

EDUCATION

- San Diego State University
  M.A. geography with an emphasis in biogeography 1996

- Humboldt State University
  B.A. geography 1989

EXPERIENCE SUMMARY

Darren Smith has twelve years experience in biological resource management. He has participated in a large number of biological research and production projects at San Diego State University (SDSU), working with Dr. John O'Leary and Dr. Janet Franklin. Mr. Smith worked for Dudek and Associates from 1997 to 2001 as an associate biologist working on a variety of conservation and development projects. He has also worked for the City of San Diego and the California Coastal Commission. Mr. Smith is currently working at California State Parks as an associate resource ecologist. His work experience in research, private consulting and government has encompassed a wide variety of projects involving intensive vegetation sampling, biological inventories and monitoring, and applying GIS and remote sensing technology to biological resource conservation and development problems. Mr. Smith has produced or played a significant role in five southern California regional vegetation mapping efforts, and participated in numerous post-burn, post-impact and revegetation monitoring projects. Mr. Smith has conducted field-based research in mediterranean-type and tropical ecosystems, focusing on patterns of plant species composition and diversity and their relationship to physical environment and disturbance. The outcome of these skills and work experience has led to the production of timely, well-received research, technical reports, and data products.

SELECTED PROFESSIONAL ASSIGNMENTS

Vegetation and Resource Mapping

- Supervised field and GIS production of TJ River Watershed vegetation and landcover database in San Diego County, California and Baja California.
- Produced vegetation maps for Fallbrook Naval Weapons Station, and Marine Corps Air Station.
- Produced vegetation, and sensitive lands data layers for the City of San Diego Environmental Tier/Future Urbanizing Area project.

Sensitive Plant Surveys

- Conducted rare plant surveys and mapped vegetation for a variety of projects in San Diego, Orange, Riverside, San Bernardino, Los Angeles, Kern, Santa Barbara, and San Luis Obispo Counties (1997-current). A selection of projects include: Moreno-Lakeside Pipeline, Wilson Creek Mitigation Bank, SCE Power Pole maintenance and replacement, White Water golf Course, Canyon Vista Estates, MSCP Black Mountain Sensitive Plant Inventory, Santa Fe Pipeline project, NCTB Miramar Curve, Oceanside/Melrose, Lone Tree Estates, Santa Fe Valley Properties, Chula Vista SPA1 and Wolf Canyon, Chino Hills State Park Inventory, Monitoring, and Assessment Program, La Purisima Visitor Center, Chino Hills Visitor Center, Red Rock-Last Chance Canyon Riparian Bypass, Piute Butte Bouldering Constraints, and Lower Topanga Canyon Rare Plant Inventory**.**

Vegetation Monitoring

- Monitored saltmarsh, and riparian revegetation efforts at Rancho Santa Fe Road Bridge, Sorrento Valley Utilities Improvements, Tijuana River Emergency Channel Mitigation Projects.
- Conducted pre-burn vegetation surveys of Burton-Mesa chaparral, Santa Barbara County.
- Monitored riparian vegetation for recovery following the removal of vehicular impacts in Coyote Canyon Anza-Borrego Desert State Park.
- Conducted long-term regional monitoring of post-burn coastal sage scrub in San Diego, Riverside and Orange Counties.
- Participated in a long-term California gnatcatcher habitat assessment including multi-year breeding and non-breeding season vegetation surveys in breeding pair home ranges and nesting sites, at MCAS Miramar, San Diego County.
- Participated in long-term study of vegetation recovery on San Clemente Island in Los Angeles County.

CATHLEEN M. WEIGAND
Botanist / Biologist

EDUCATION/REGISTRATION

- Humboldt State University
  B.S., Botany and Biology, 2000

- New Dawn Center (Finca Alba Nueva), San Isidro, Costa Rica
  Senior Thesis Study, 1997

PROFESSIONAL CERTIFICATIONS

- Certified Wetland Delineator (#2133) - Army Corps of Engineers Wetland Delineation & Management Training Program - 2002

- U.S.F.S. Wildland Firefighter Red Card Certified

EXPERIENCE SUMMARY

Ms. Weigand is a botanist/biologist with over four years experience in field studies, environmental document preparation, habitat restoration and conservation, vegetation resource mapping, and biological assessments. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetland delineations, permitting, mitigation design, implementation and monitoring, and endangered and sensitive plant species surveys. Projects include issues relative to the California Coastal Act, the California Department of Fish and Game Code (Sections 1601 and 1603), and the federal Clean Water Act (Sections 401 and 404). Ms. Weigand has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Her current role at Dudek & Associates includes biological resources assessment and impact analysis, wetland delineations and permitting, and habitat restoration and monitoring.

PROFESSIONAL ASSIGNMENTS

Focused rare plant surveys. Newhall Ranch, Los Angeles County, California. Conducted rare plant surveys for the state-listed endangered San Fernando spineflower (*Chorizanthe parryi* var. *fernandina*) and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003.

Experience with seed and plant propagation

Greenhouse work (Humboldt State University- volunteer): watering, caring and maintenance of plants, re-potting/propagation, nomenclature of species housed in greenhouse, and preparation of species used for classroom and experimental purposes.

Horticulture and nursery experience: watering, fertilizing, caring and maintenance of plants, propagation (plant cuttings, roots, and seeds), re-potting, installation and design of irrigation systems.

Experience with growth chambers, preparation and implementation of fertilizers and composts, and the irrigation of greenhouses and farm properties.

Riparian and wetland revegetation implementation.

Seed and pollen collection.

Supervising of farm and revegetation crews.

Implementation of farm crops, community and personal gardens using sustainable agricultural practices.

I. Revegetation and landscape design and implementation, monitoring, maintenance, and data collection.

TRICIA L. WOTIPKA
Environmental Specialist

EDUCATION

Pennsylvania State University
B.S. Wildlife and Fisheries Science (2000)
(Dean's Honor List, Fall 1998 - Spring 2000)

PROFESSIONAL AFFILIATIONS

- Audubon Society, 2000
- Women=s Environmental Council, past Secretary, 2001 and Newsletter Chair, 2002

EXPERIENCE SUMMARY

Ms. Wotipka has over two years experience in environmental document preparation and resource conservation planning. Project experience includes rare plant surveys, biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and endangered species surveys. Projects include issues relative to the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act, and the Endangered Species Act (ESA). Ms. Wotipka has also trained with the Wetlands Training Institute, Inc. and has successfully completed a course in basic wetlands delineation.

PROFESSIONAL ASSIGNMENTS

- **Sewer Line Relocation and Park Improvements.** Aliso Creek Emergency Sewer and Park Improvements Project, Orange County, California. Assisted in focused rare plant surveys for the federally-listed threatened and state-listed endangered thread-leaved brodiaea (*Brodiaea filifolia*). Prepared a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Negotiated with resource agencies to identify appropriate mitigation measures, including the creation and enhancement of southern willow scrub and mule fat scrub wetlands within the reserve.

- **Railway Expansion Project.** Sorrento-Miramar Curve Realignment and Second Main Track Project. City of San Diego, California. Conducted field surveys for sensitive, state- and federally-listed plant species on approximately 190 acres.

- **Church Development Project.** St. Jerome=s Catholic Church Project. City of San Diego, California. Conducted field surveys for state- and federally-listed species on approximately 18 acres.

- **Residential Subdivision and Roadway Improvements Project.** University Commons Development Project, City of San Marcos, California. Performed a delineation of Awaters of the United States@ and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Prepared and processed a Section 404 and 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code.

- **Residential Subdivision.** Goodwin Drive Residential Development, City of Vista, California. Conducted a delineation of Awaters of the United States@ and wetlands under the jurisdiction of the U. S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG). Obtained a Section 401 permit application in accordance with the federal Clean Water Act and a 1603 Streambed Alteration Agreement in accordance with California Fish and Game Code. Negotiated with resource agencies to identify appropriate mitigation measures, including the creation of southern willow scrub wetlands.

- **Conservation Planning.** Assisted in the development of the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. Project involvement included research on potentially covered plant species followed by syntheses of ecological information and the preparation of sensitive species conservation analysis.

RELEVANT EXPERIENCE

- Restoration/Maintenance volunteer - Habitat West, Vista, California. Assisted in the restoration and management of native habitats for the coastal California gnatcatcher.

- Restoration/Maintenance volunteer - Habitat West, Vista, California. Evaluated the health of newly planted vegetation; identified and removed pestilent species when necessary; identified shrubs and native scrub communities.

- Pennsylvania Cooperative Fish & Wildlife Service Unit. Flushed and recorded the location of ruffed grouse to note the effects of timber harvest on grouse management.

- Pennsylvania Wildlife Habitat Evaluation Project. Judged over 60 kids aged 8-18 years old in a multi-county wildlife evaluation competition in Pennsylvania.

- Pennsylvania Wildlife Habitat Evaluation Project. Evaluated students based on their knowledge of PA wildlife habitats, correct identification of wildlife foods, oral presentations, and on-site written management plans.

PUBLICATIONS

- Researched and prepared the introduction of the "Spring Creek Watershed Water Sampling Protocol" for the Clearwater Conservancy - Fall 1999.

- Designed and produced a web page in Spring 2000 (now out of service) entitled "Beaks and Buds". It was located at http://www.personal.psu. edu/tlw188**.**

APPENDIX B

VASCULAR PLANT SPECIES OBSERVED AT NEWHALL RANCH (2002)

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

LYCOPODIAE

SELAGINELLACEAE - SPIKE-MOSS FAMILY

Selaginella bigelovii - Bigelow's spike-moss

EQUISETAE

EQUISETACEAE - HORSETAIL FAMILY

Equisetum hyemale – common scouring-rush
Equisetum laevigatum - smooth scouring-rush
Equisetum telmateia - giant horsetail

FILACEAE

AZOLLACEAE - MOSQUITO FERN FAMILY

Azolla c.f. filiculoides - duckweed fern

DENNSTAEDTIACEAE - BRAKEN FAMILY

Adiantum jordani - California maiden-hair
Pellaea andromedifolia - coffee fern
Pellaea mucronata var. *mucronata* - bird's-foot fern
Pentagramma triangularis - goldenback fern

POLYPODIACEAE - POLYPODY FAMILY

Polypodium californicum - California polypody

CONIFERAE

CUPRESSACEAE - CYPRESS FAMILY

* *Cedrus deodara* - Deodar cedar
Juniperus californica - California juniper

PINACEAE - PINE FAMILY

* *Pinus halepensis* - Aleppo pine
* *Pinus pinea* – stone pine

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - FIG-MARIGOLD FAMILY

* *Aptenia cordifolia* - baby sun-rose
* *Carpobrotus* sp. - sea-fig

AMARANTHACEAE - AMARANTH FAMILY

* *Amaranthus albus* - tumbleweed
Amaranthus blitoides - prostrate amaranth
* *Amaranthus hybridus* - amaranth
Amaranthus palmeri - Palmer's amaranth
Amaranthus powellii - Powell=s amaranth
* *Amaranthus retroflexus* - rough pigweed

ANACARDIACEAE - SUMAC FAMILY

Malosma laurina - laurel sumac
Rhus ovata - sugar-bush
Rhus trilobata - squaw bush
* *Schinus molle* - Peruvian pepper-tree
Toxicodendron diversilobum - poison-oak

APIACEAE - CARROT FAMILY

* *Anethum graveolens* - dill
Apiastrum angustifolium - wild celery
* *Apium graveolens* - celery
Berula erecta - cutleaf water-parsnip
Bowlesia incana – American bowlesia
* *Coriandrum sativum* - cilantro
* *Daucus carota* – Queen Anne's lace
Daucus pusillus – rattlesnake weed
Lomatium utriculatum - common lomatium

APOCYNACEAE - DOGBANE FAMILY

Apocynum cannabinum - Indian hemp
* *Vinca major* - periwinkle

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

ASCLEPIADACEAE - MILKWEED FAMILY

Asclepias californica – California milkweed
Asclepias fascicularis - narrow-leaf milkweed

ASTERACEAE - SUNFLOWER FAMILY

Achillea millefolium – yarrow
Achyrachaena mollis – blow-wives
Acourtia microcephala – sacapellote
Agoseris grandiflora – large-flowered agoseris
Ambrosia acanthicarpa - annual burweed
Ambrosia confertifolia - weak-leaved burweed
Ambrosia psilostachya - western ragweed
Artemisia californica - coastal sagebrush
Artemisia douglasiana - California mugwort
Artemisia dracunculus - tarragon
Artemisia tridentata - Great Basin sagebrush
Baccharis douglasii - marsh baccharis
Baccharis emoryi – Emory's baccharis
Baccharis pilularis - coyote brush
Baccharis salicifolia - mule fat
Baccharis sarothroides - chaparral broom
Brickellia californica - California brickellbush
Brickellia nevinii - Nevin's brickellbush
* *Carduus pycnocephalus* - Italian thistle
* *Centaurea melitensis* - star thistle
Chaenactis glabriuscula - yellow pincushion
* *Chrysothamnus nauseosus* - rubber rabbitbrush
Cirsium occidentale var. *californicum*- California thistle
Cirsium occidentale var. *occidentale*- cobwebby thistle
* *Cirsium vulgare* - bull thistle
* *Cnicus benedictus* - blessed thistle
Conyza canadensis - horseweed
Conyza coulteri - Coulter's conyza
Coreopsis bigelovii – Bigelow's coreopsis
* *Coreopsis tinctoria* – calliopsis
Corethrogyne filaginifolia - virgate cudweed aster

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

* *Cotula coronopifolia* - African brass-buttons
Encelia actoni - Acton's encelia
Encelia californica - California bush sunflower
Encelia farinosa - brittlebush, incensio
Ericameria palmeri var. *pachylepis* - goldenbush
Ericameria pinifolia - pine-bush
Erigeron foliosus - leafy daisy
Eriophyllum confertiflorum - long-stem golden yarrow
Euthamia occidentalis - western goldenrod
Filago californica - California fluffweed
Filago gallica - narrow-leaf filago
* *Gazania linearis* - gazania
Gnaphalium bicolor - bicolor cudweed
Gnaphalium californicum - California everlasting
Gnaphalium canescens ssp. *microcephalum* - white everlasting
Gnaphalium leucocephalum – Sonora everlasting
Gnaphalium luteo-album - white cudweed
Gnaphalium sp. *nova* - everlasting
Gnaphalium palustre - lowland cudweed
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
Helianthus annuus - common sunflower
Helianthus nuttallii c.f. ssp. *parishii* - Los Angeles sunflower
Hemizonia fasciculata - fascicled tarweed
Hemizonia kelloggii – Kellogg's tarweed
Heterotheca grandiflora - telegraph weed
Heterotheca sessiliflora - golden aster
Isocoma menziesii - goldenbush
Iva axillaris - poverty weed
* *Lactuca serriola* - prickly lettuce
Lagophylla ramosissima – common hareleaf
Lasthenia californica - coast goldfields
Lepidospartum squamatum - scale-broom
Lessingia glandulifera – lessingia
Malacothrix saxatilis - cliff malacothrix
* *Matricaria matricarioides* - pineapple weed
Micropus californicus - slender cottonweed
Pluchea odorata - marsh-fleabane

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

Pluchea sericea - arrow weed
* *Pulicaria paludosa* - Spanish sunflower
Rafinesquia californica - California chicory
Senecio californicus – California butterweed
Senecio flaccidus var. *douglasii* - butterweed
* *Senecio vulgaris* - common groundsel
Silybum marianum - milk thistle
* *Sonchus asper* - prickly sow-thistle
* *Sonchus oleraceus* - common sow-thistle
Stebbinoseris heterocarpa [*Microseris heterocarpa*] – brown puffs
Stephanomeria exigua - small wreathplant
Stephanomeria pauciflora - wire-lettuce
Stephanomeria virgata - twiggy wreathplant
Stylocline gnaphaloides - everlasting nest-straw
Uropappus lindleyi [*Microseris lindleyi*] – silver puffs
Wyethia ovata - mule ears
Xanthium spinosum - spiny cocklebur
Xanthium strumarium – cocklebur

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia – white alder

BORAGINACEAE - BORAGE FAMILY

Amsinckia menziesii var. *intermedia* - yellow fiddleneck
Amsinckia menziesii var. *menziesii* - yellow fiddleneck
Amsinckia tessellata – devil's lettuce
Cryptantha sp. - forget-me-not
Cryptantha intermedia - common forget-me-not
Cryptantha micrantha – redroot cryptantha
Cryptantha microstachys – tejon cryptantha
Cryptantha muricata – prickly cryptantha
Heliotropium curassavicum - wild heliotrope
Pectocarya linearis - slender pectocarya
Pectocarya penincillata - pectocarya
Pectocarya setosa - pectocarya
Plagiobothrys arizonicus - popcorn flower
Plagiobothrys canescens - rusty popcorn flower

Plagiobothrys collinus - California popcorn flower
Plagiobothrys fulvus - *common popcorn flower*

BRASSICACEAE - MUSTARD FAMILY

Athysanus pusillus – dwarf athysanus
* *Brassica nigra* - black mustard
* *Capsella bursa-pastoris* - shepard's purse
Caulanthus lasiophyllus – California mustard
* *Hirschfeldia incana* - short-podded mustard
Lepidium lasiocarpum - peppergrass
* *Lepidium latifolium* - peppergrass
Lepidium virginicum - wild peppergrass
* *Lobularia maritime* – sweet-alyssum
* *Raphanus sativus* - wild radish
* *Rorippa nasturtium-aquaticum* - water cress
* *Sisymbrium altissimum* - tumble mustard
* *Sisymbrium irio* - London rocket
* *Sisymbrium officinale* - hedge mustard
* *Sisymbrium orientale* - Oriental mustard
Stanleya pinnata var. *pinnata*– Prince's plume
Thysanocarpus curvipes – fringepod
Tropidocarpum gracile – slender dobie-pod

CACTACEAE - CACTUS FAMILY

* *Cereus peruvianus* - Peruvian apple cactus
Opuntia basilaris var. *ramosa* – beaver-tail cactus
Opuntia californica var. *parkeri* - cane cholla
Opuntia littoralis - coastal prickly-pear
Opuntia X vaseyi - prickly-pear cactus
* *Trichocereus spachianus* - golden torch cactus

CAPPARACEAE - CAPER FAMILY

Isomeris arborea - bladderpod

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Lonicera subspicata - southern honeysuckle
Sambucus mexicana - Mexican elderberry

Symphoricarpos sp. - snowberry
Symphoricarpos c.f. mollis - spreading snowberry

CARYOPHYLLACEAE - PINK FAMILY

* *Cerastium glomeratum* - sticky mouse-ear
* *Herniaria cinerea* - gray herniaria
Loeflingia squarrosa - no common name
* *Silene gallica* - common catchfly
Spergularia sp. - stickwort, starwort
* *Spergularia rubra* - sand-spurrey
* *Spergularia c.f. villosa* - villous sand-spurrey
* *Stellaria media* - common chickweed

CASURINACEAE – SHEET OAK FAMILY

* *Casuarina cunninghamiana* - Austrailian Pine

CHENOPODIACEAE - GOOSEFOOT FAMILY

Atriplex canescens - four-winged saltbush
* *Atriplex heterosperma* - weedy orache
Atriplex lentiformis- big saltbush, quail brush
* *Atriplex rosea* - tumbling oracle
* *Atriplex semibaccata* - Australian saltbush
Atriplex serenana var. *serenana* - bractscale
Atriplex suberecta - Australian saltbush
Atriplex triangularis – spearscale
* *Bassia hyssopifolia* - five-hooked bassia
* *Beta vulgaris* – garden beet
* *Chenopodium album* - lamb's-quarters
* *Chenopodium ambrosioides* - Mexican tea
Chenopodium berlandieri - pitseed goosefoot
* *Chenopodium botrys* - goosefoot
Chenopodium californicum - California goosefoot
* *Chenopodium murale* - nettle-leaved goosefoot
Chenopodium rubrum - red goosefoot
* *Salsola tragus* - Russian-thistle
* *Spinacia oleracea* – spinach

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

CONVOLVULACEAE - MORNING-GLORY FAMILY

Calystegia peirsonii - Peirson's morning-glory
* Convolvulus arvensis - bindweed

CRASSULACEAE - STONECROP FAMILY

Crassula connata - dwarf stonecrop
Dudleya cymosa - unidentified dudleya
Dudleya lanceolata - lanceleaf dudleya

CUCURBITACEAE - GOURD FAMILY

Cucurbita foetidissima - coyote-melon, calabazilla
Marah macrocarpus - wild cucumber

CUSCUTACEAE - DODDER FAMILY

Cuscuta californica - California dodder
Cuscuta pentagona – dodder
Cuscuta subinclusa – dodder

DATISCACEAE - DASTICA FAMILY

Dastica glomerata - Durango root

ERICACEAE - HEATH FAMILY

Arctostaphylos glauca - bigberry manzanita

EUPHORBIACEAE - SPURGE FAMILY

Chamaesyce albomarginata - rattlesnake spurge
* *Chamaesyce maculata* – spotted spurge
Chamaesyce polycarpa - small-seed sand mat
Chamaesyce serpyllifolia – thyme-leafed spurge
Croton californicus - California croton
Eremocarpus setigerus - doveweed
Euphorbia spathulata - reticulate-seed spurge
* *Ricinus communis* - castor-bean
Stillingia linearifolia - linear-leaved stillingia

FABACEAE - PEA FAMILY

* *Acacia baileyana* - golden wattle

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

Astragalus didymocarpus – white dwarf locoweed
Astragalus gambelianus – *Gambel's locoweed*
Astragalus trichopodus - Santa Barbara locoweed
Glycyrrhiza lepidota - wild licorice
Lathyrus laetiflorus - wild sweet pea
Lathyrus vestitus - wild pea
Lotus corniculatus - bird's-foot lotus
Lotus hamatus – grab lotus
Lotus humistratus - lotus
Lotus purshianus - Spanish-clover
Lotus salsuginosus - coastal lotus
Lotus scoparius var. *scoparius* - deerweed
Lotus strigosus - strigose deerweed
Lupinus bicolor - Lindley's annual lupine
Lupinus excubitus – no common name
Lupinus excubitus var. *hallii* - grape soda lupine
Lupinus hirsutissimus - stinging lupine
Lupinus microcarpus var. *densiflorus* - chick lupine
Lupinus microcarpus var. *microcarpus* - chick lupine
Lupinus sparsiflorus - Coulter's lupine
Lupinus succulentis - arroyo lupine
Lupinus truncatus - collar lupine
* *Medicago polymorpha* - California burclover
* *Medicago polymorpha* var. *brevispina* - short-spined California burclover
* *Medicago sativa* - alfalfa
* *Melilotus alba* - white sweet-clover
* *Melilotus indica* - yellow sweet-clover
* *Robinia pseudoacacia* - black locust
Trifolium sp. – clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum- tree clover
* *Trifolium fragiferum* - strawberry clover
Trifolium gracilentum – pin-point clover
* *Trifolium hirtum* - rose clover
Trifolium microcephalum – maiden clover
* *Trifolium repens* - white clover

Trifolium willdenovii – valley clover
Vicia hassei – Hesse's vetch

FAGACEAE - BEECH FAMILY

Quercus agrifolia - coast live oak
Quercus berberidifolia - scrub oak
Quercus douglasii - blue oak
Quercus lobata - valley oak

GERANIACEAE - GERANIUM FAMILY

* *Erodium cicutarium* - red-stemmed filaree
* *Erodium botrys* – long-beaked filaree
* *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE - CURRANT FAMILY

Ribes aureum - golden currant
Ribes malvaceum - chaparral currant

HYDROPHYLLACEAE - WATERLEAF FAMILY

Emmenanthe penduliflora - whispering bells
Eriodictyon crassifolium var. *nigrescens* - yerba santa
Eucrypta chrysanthemifolia - common eucrypta
Nemophila menziesii – baby blue-eyes
Nemophila parviflora var. *quercifolia* – oak-leaved nemophila
Phacelia cicutaria - caterpillar phacelia
Phacelia cicutaria var. *hispida* – caterpillar phacelia
Phacelia distans - blue fiddleneck
Phacelia imbricata ssp. *imbricata* - imbricate phacelia
Phacelia minor - wild canterbury-bell
Phacelia ramosissima - shrubby phacelia

JUGLANDACEAE - WALNUT FAMILY

Juglans californica - southern California black walnut

LAMIACEAE - MINT FAMILY

* *Marrubium vulgare* - horehound
Mentha citrata – orange mint

Salvia apiana - white sage
Salvia columbariae - chia
Salvia leucophylla - purple sage
Salvia mellifera - black sage
Stachys ajugoides – bugle hedge-nettle
Stachys ajugoides var. *rigida* - rigid hedge-nettle
Stachys albens - white hedge-nettle
Trichostema lanceolatum - vinegar weed

LAURACEAE - LAUREL FAMILY

Umbellularia californica - California laurel

LOASACEAE - STICK-LEAF FAMILY

Mentzelia sp. -
Mentzelia laevicaulis - blazing star
Mentzelia micrantha - small-flowered stick-leaf

LYTHRACEAE - LOOSESTRIFE FAMILY

Lythrum californicum - California loosestrife

MALVACEAE - MALLOW FAMILY

Malacothamnus fasciculatus ssp. *laxiflorus* – chaparral bush mallow
Malacothamnus fremontii – bush mallow
Malacothamnus marrubioides - bush mallow
* *Malva neglecta* - common mallow
* *Malva parviflora* - cheeseweed

MELIACEAE - MAHOGANY FAMILY

* *Melia azedarach* - China berry

MORACEAE - FIG FAMILY

* *Ficus carica* - fig

MYRTACEAE - MYRTLE FAMILY

* *Eucalyptus* sp. - eucalyptus
* *Eucalyptus camaldulensis* – red gum
* *Eucalyptus globulus* - blue gum

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

* *Eucalyptus leucoxylon* - white ironbark
* *Eucalyptus sideroxylon* - red ironbark

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

Mirabilis laevis var. *crassifolia* [*M. californica*]- California wishbone-bush

OLEACEAE - OLIVE FAMILY

Fraxinus dipetala - California ash
* *Fraxinus uhdei* – tropical ash
Fraxinus velutina – velvet ash
* *Ligustrum lucidum* - glossy privet
* *Olea europaea* - mission olive

ONAGRACEAE - EVENING-PRIMROSE FAMILY

Camissonia bistorta – southern sun cup
Camissonia boothii - sun cup
Camissonia boothii ssp. *decorticans* – shredding evening primrose
Camissonia californica - mustard primrose
Camissonia hirtella - sun cup
Camissonia strigulosa - sun cup
Clarkia purpurea - winecup clarkia
Clarkia speciosa - clarkia
Clarkia unguiculata - elegant clarkia
Epilobium brachycarpum - willow herb
Epilobium canum ssp. *canum* - California fuchsia
Epilobium ciliatum - California cottonweed
Ludwigia peploides - yellow waterweed
Ludwigia repens - water primrose
Oenothera elata - evening primrose

OROBANCHACEAE - BROOM-RAPE FAMILY

Orobanche parishii ssp. *parishii* - broom-rape

PAEONIACEAE - PEONY FAMILY

Paeonia californica - California peony

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

PAPAVERACEAE - POPPY FAMILY

Argemone corymbosa – prickly poppy
Eschscholzia californica - California poppy
Platystemon californicus – California creamcups

PLANTAGINACEAE - PLANTAIN FAMILY

Plantago erecta - dot-seed plantain
* *Plantago indica* - plantain
* *Plantago lanceolata* - English plantain
* *Plantago major* - common plantain

PLATANACEAE - SYCAMORE FAMILY

Platanus racemosa - western sycamore

POLEMONIACEAE - PHLOX FAMILY

Allophyllum divaricatum - purple false gilyflower
Eriastrum densifolium - woollystar
Eriastrum densifolium ssp. *mohavense* - Mohave eriastrum
Eriastrum sapphirinum - sapphire eriastrum
Gilia angelensis - angel gilia
Gilia capitata – globe gilia
Leptodactylon californicum - prickly phlox
Linanthus androsaceus – common linanthus
Linanthus pygmaeus - linanthus
Navarretia atractyloides - holly-leaf skunkweed
Phlox gracilis – slender phlox

POLYGONACEAE - BUCKWHEAT FAMILY

Chorizanthe parryi var. *fernandina* - San Fernando Valley spineflower
Chorizanthe staticoides - turkish rugging
Eriogonum sp. #1 - buckwheat
Eriogonum sp. #2 - buckwheat
Eriogonum elongatum - long-stemmed buckwheat
Eriogonum fasciculatum ssp. *foliolosum* - California buckwheat
Eriogonum c.f. gracile - slender woolly buckwheat
Eriogonum c.f. viridescens - buckwheat
Lastarriaea coriacea - lastarriaea

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

* *Polygonum arenastrum* - common knotweed
* *Polygonum argyrocoleon* - smartweed
Polygonum lapathifolium - willow weed
Polygonum punctatum - perennial smartweed
Pterostegia drymarioides - pterostegia
* *Rumex conglomeratus* - whorled dock
* *Rumex crispus* - curly dock
Rumex hymenosepalus - wild rhubarb
Rumex obtusifolius - dock
Rumex salicifolius - willow dock

PORTULACACEAE - PURSLANE FAMILY

Calandrinia ciliata - redmaids
Claytonia parviflora - small-leaved montia
Claytonia perfoliata – miner's lettuce
* *Portulaca oleracea* - common purslane

RANUNCULACEAE - BUTTERCUP FAMILY

Clematis ligusticifolia - yerba de chiva
Delphinium parryi ssp. *parryi* – Parry's larkspur

RHAMNACEAE - BUCKTHORN FAMILY

Ceanothus crassifolius - hoary-leaved ceanothus
Ceanothus tomentosus - woolyleaf ceanothus
Rhamnus crocea - redberry
Rhamnus ilicifolia - holly-leaf redberry

ROSACEAE - ROSE FAMILY

Adenostoma fasciculatum – chamise
Cercocarpus betuloides – mountain-mahogany
Cercocarpus betuloides var. *betuloides* - birch-leaf mountain-mahogany
Cercocarpus betuloides var. *blancheae* - island mountain-mahogany
Heteromeles arbutifolia - toyon
Prunus ilicifolia - holly-leaf cherry
Rosa californica - California rose
Rubus ursinus - California blackberry
* *Sangwisorba minor* – garden burnet

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

RUBIACEAE - MADDER FAMILY

Galium angustifolium - narrow-leaved bedstraw
* *Galium aparine* - goose grass
Galium porrigens - climbing bedstraw

SALICACEAE - WILLOW FAMILY

Populus fremontii - Fremont's cottonwood
Salix exigua - narrow-leaved willow
Salix gooddingii - black willow
Salix laevigata - red willow
Salix lasiolepis - arroyo willow
Salix lucida ssp. *lasiandra* - golden willow

SAURURACEAE - LIZARD'S-TAIL FAMILY

Anemopsis californica - yerba mansa

SCROPHULARIACEAE - FIGWORT FAMILY

Antirrhinum coulterianum - white snapdragon
Castilleja affinis - coast paintbrush
Castilleja densiflora - dense-flowered owl's-clover
Castilleja exserta - common owl's-clover
Castilleja foliolosa - woolly Indian paintbrush
Collinsia heterophylla – purple Chinese houses
Cordylanthus rigidus – bird's beak
Keckiella cordifolia - heart-leaf penstemon
Linaria canadensis - toadflax
Mimulus aurantiacus - bush monkeyflower
Mimulus aurantiacus var. *pubescens* - bush monkeyflower
Mimulus guttatus - seep monkeyflower
Mimulus pilosus – downy monkeyflower
Penstemon centranthifolius - scarlet bugler
* *Verbascum thapsus* - woolly mullein
* *Verbascum virgatum* - wand mullein
* *Veronica anagallis-aquatica* - water speedwell

SIMAROUBACEAE - QUASSIA FAMILY

* *Ailanthus altissima* - tree of heaven

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

SOLANACEAE - NIGHTSHADE FAMILY

* *Datura wrightii* - western jimsonweed
* *Nicotiana glauca* - tree tobacco
* *Solanum americanum* - small-flowered nightshade
Solanum douglasii - white nightshade
* *Solanum eleagnifolium* - silver leaf horse-nettle
* *Solanum sarrachoides* - hairy nightshade
Solanum xanti - chaparral nightshade

TAMARICACEAE - TAMARISK FAMILY

* *Tamarix* sp. - tamarisk

ULMACEAE - ELM FAMILY

* *Ulmus pumila* - Siberian elm

URTICACEAE - NETTLE FAMILY

Hesperocnide tenella – western nettle
Parietaria hespera – western pellitory
Urtica dioica - giant creek nettle
* *Urtica urens* - dwarf nettle

VERBENACEAE - VERVAIN FAMILY

Verbena lasiostachys - western verbena

VIOLACEAE – VIOLET FAMILY

Viola pedunculata – Johnny jump-ups

VISCACEAE - MISTLETOE FAMILY

Phoradendron macrophyllum - big leaf mistletoe
Phoradendron villosum - oak mistletoe

VITACEAE - GRAPE FAMILY

Parthenocissus vitacea - woodbine, Virginia creeper
Vitis girdiana - desert wild grape

ZYGOPHYLLACEAE - CALTROP FAMILY

* *Tribulus terrestris* - puncture vine

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE - PALM FAMILY

* *Washingtonia robusta* - Mexican fan palm

CYPERACEAE - SEDGE FAMILY

Carex sp. - sedge
Cyperus eragrostis - tall cyperus
Cyperus esculentus - yellow nut-grass
* *Cyperus involucratus* - nutsedge
Cyperus odoratus - coarse cyperus
Eleocharis montevidensis - slender creeping spike-rush
Eleocharis parishii - spike-rush
Scirpus acutus - hard-stemmed bulrush
Scirpus americanus - winged three-square
Scirpus maritimus – alkali bulrush
Scirpus microcarpus - bulrush
Scirpus robustus - Pacific coast bulrush

JUNCACEAE - RUSH FAMILY

Juncus sp. -
Juncus acutus – spiny rush
Juncus balticus - wire rush
Juncus bufonius - toad rush
Juncus longistylis - rush
Juncus rugulosus - wrinkled rush
Juncus textilis - Indian rush
Juncus torreyi – rush
Juncus triformis - Yosemite dwarf rush
Juncus xiphioides - iris-leaved rush

LEMNACEAE - DUCKWEED FAMILY

Lemna valdiviana - duckweed

LILIACEAE - LILY FAMILY

* *Allium cepa* - onion
Allium porrum - onion

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

* *Amaryllis bella-donna* - naked lady
* *Asparagus officinalis* – asparagus
Bloomeria crocea – common goldenstar
Brodiaea terrestris ssp. *kernensis* - brodiaea
Calochortus clavatus var. *gracilis*- slender mariposa lily
Calochortus venustus - mariposa lily
Dichelostemma capitatum - blue dicks
Muilla maritima - common muilla
Yucca whipplei – Our Lord's candle

POACEAE - GRASS FAMILY

Achnatherum coronatum - giant needlegrass
* *Agrostis* sp. - bentgrass
* *Agrostis viridis* - water bent
* *Arundo donax* - giant reed
* *Avena barbata* - slender oat
* *Avena fatua* - wild oat
Bromus catharticus - California brome
* *Bromus diandrus* - ripgut grass
* *Bromus hordeaceus* - soft chess
* *Bromus madritensis* ssp. *rubens* - foxtail chess
* *Bromus sterilis* – sterile brome
* *Bromus tectorum* - cheat grass
* *Cortaderia jubata* - pampas grass
* *Crypsis schoenoides* - prickle grass
* *Cynodon dactylon* - Bermuda grass
* *Digitaria sanguinalis* - hairy crabgrass
Distichlis spicata - salt grass
* *Echinochloa colonum* - jungle-rice
Echinochloa crus-galli - barnyard grass
* *Eleusine indica* – goose grass
Elymus glaucus - western wild-rye
Eragrostis mexicana - lovegrass
* *Festuca arundinacea* - tall fescue
* *Hordeum marinum* - Mediterranean barley
* *Hordeum murinum* - glaucous foxtail barley
* *Lamarckia aurea* - goldentop

APPENDIX B
VASCULAR PLANT SPECIES - NEWHALL RANCH

* *Leptochloa uninerva* - Mexican sprangletop
Leymus condensatus - giant ryegrass
Leymus triticoides - beardless wild rye
Leptichloa uninervia - Mexican sprangletop
* *Lolium perenne* - perennial ryegrass
Melica imperfecta - California melic
Muhlenbergia microsperma - littleseed muhly
Nassella cernua - nodding needlegrass
Nassella lepida - foothill needlegrass
Nassella pulchra – purple needlegrass
Panicum capillare – western witchgrass
* *Panicum miliaceum* – broom corn millet
Paspalum distichum – knotgrass
* *Phalaris aquatica* – Harding grass
* *Phalaris minor* - Mediterranean canary grass
* *Piptatherum miliaceum* - smilo grass
* *Poa annua* - annual bluegrass
Poa secunda - Malpais bluegrass
* *Polypogon interruptus* - ditch beard grass
* *Polypogon monspeliensis* - rabbit's-foot grass
Schismus barbatus – abumashi
Sorghum bicolor – sorghum
Sorghum halepense – Johnsongrass
Vulpia microstachys - fescue
* *Vulpia myuros* - rattail fescue
Vulpia octoflora - six-weeks fescue

POTAMOGETONACEAE - PONDWEED FAMILY

Potamogeton foliosus - leafy pondweed

TYPHACEAE - CATTAIL FAMILY

Typha domingensis - slender cattail
Typha latifolia - broad-leaved cattail

* signifies introduced (non-native) species

APPENDIX C

CALIFORNIA NATURAL DIVERSITY DATABASE FORMS

APPENDIX C

CALIFORNIA NATURAL DIVERSITY DATABASE FORMS

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 24-27 Jun 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains, Newhall Ranch, northwest of confluence of the Santa Clara River and Castaic Creek, scattered on both sides of Chiquito Canyon.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 1000-1300' T 4N R 17W ___ ¼ of ___ ¼ Sec 15 and 16

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? __X__ Yes _____ No _____ Unknown

Total # of Individuals = ~300 Is this a subsequent visit? ___ Yes __X__ No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): ___ % vegetative ___ % flowering 100 % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing; Possible Threats: Currently proposed for commercial/residential development.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

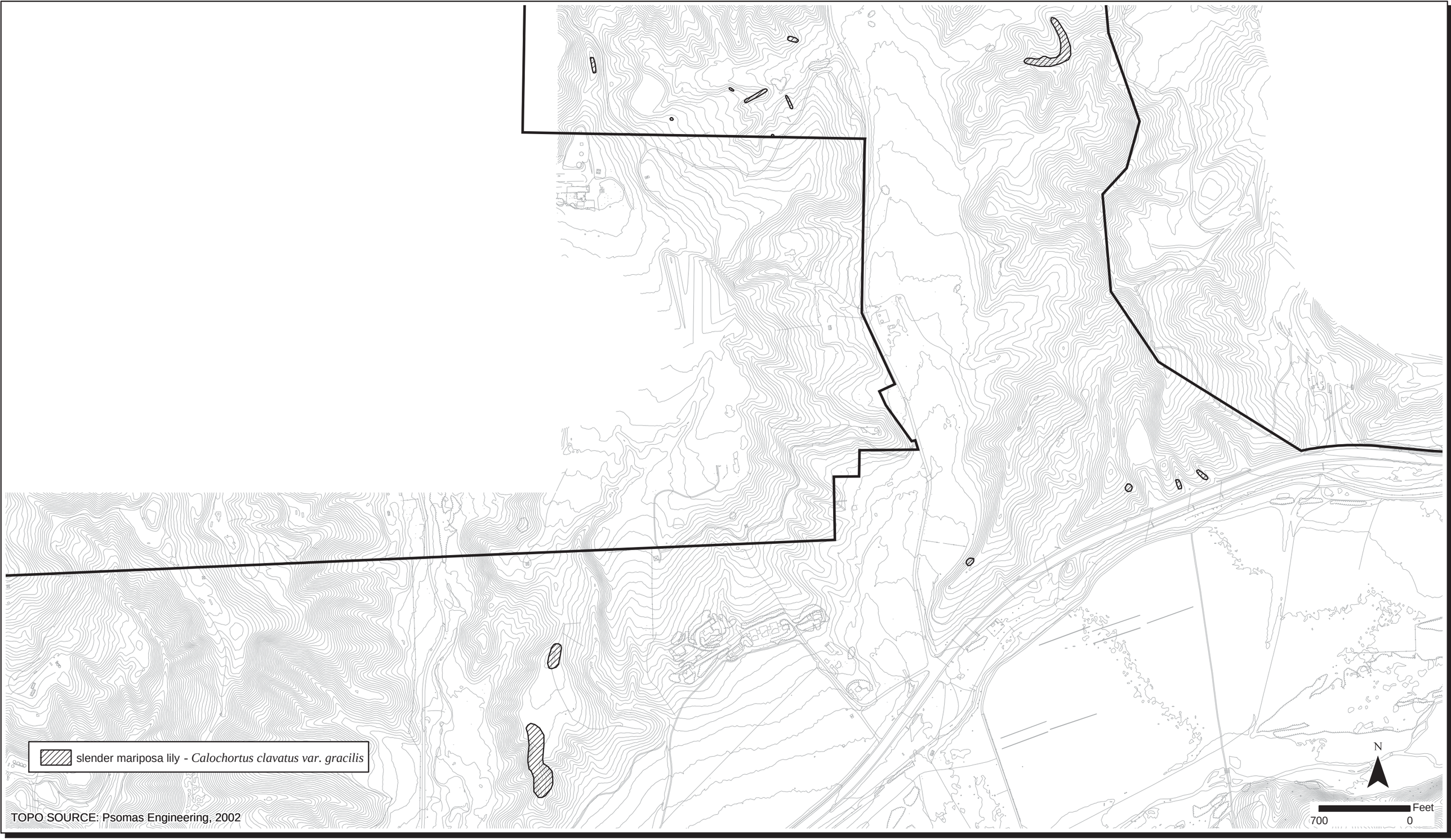
__X__ Keyed in a site reference: Hickman 1993
__X__ Compared with specimen housed at: RSA
_____ Compared with photo/drawing in:
_____ By another person (name):
_____ Other:

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No



Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - Chiquito Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 11 Jun to 18 Jul 2003 County: Los Angeles Collection: If yes, # Mus./Herb: UCR

Location: Northern Santa Susana Mountains, Newhall Ranch, southeast of confluence of the Santa Clara River and Castaic Creek, east, south, and west edges of Airport Mesa and adjacent mesas.

Quad Name: Newhall T 4N R 16W W ¼ of W ¼ Sec 3
X 7½' __ 15' Elevation: 1075-1250' T 4N R 17W E ¼ of E ¼ Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? ____ Yes X No ____ Unknown

Total # of Individuals = ~1,114,000 plants Is this a subsequent visit? X Yes __ No Compared to your last visit: X more __ same __ fewer

Phenology (plants): ____ % vegetative 10 % flowering 90 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Zamora clay loam and terrace escarpment soils; ridges and slopes down from mesa tops and from agricultural areas. Primarily on southeast- to south- to southwest-facing slopes with macro-slope gradients typically ranging between 5 degrees and 35 degrees; micro-slope gradients are typically slightly shallower (2 degrees to 20 degrees), but are locally steeper. Soils color is generally brown (10YR 5/3). California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, E. elongatum, E. gracile, Salvia leucophylla, Ericameria palmeri* var. *pachypus, Mirabilis californica*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming, potential herbiciding; Possible Threats: proposed residential/commercial development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments: A conservation easement has been placed on approximately 44 acres of this occurrence.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

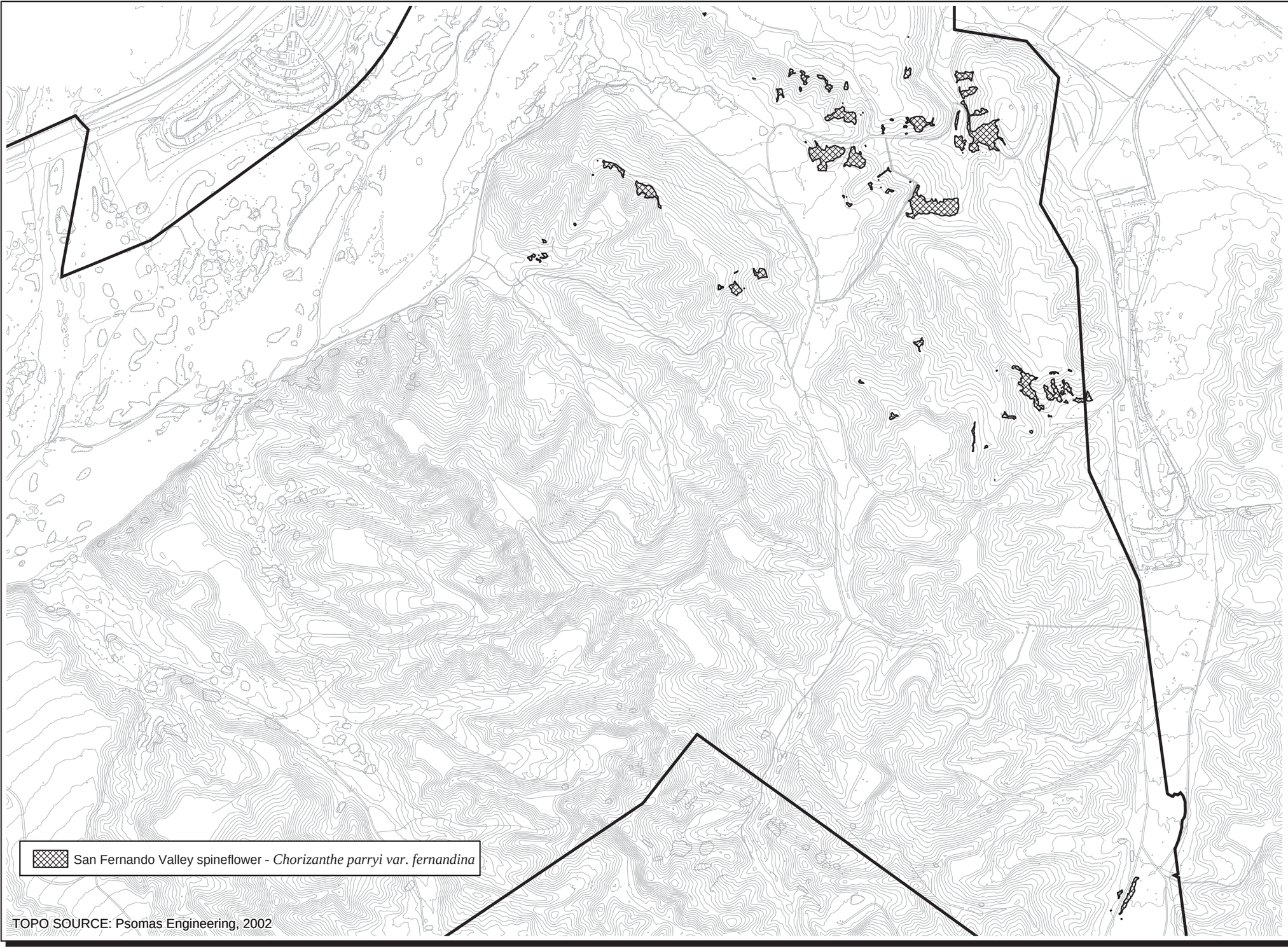
X Keyed in a site reference:
X Compared with specimen housed at: UCR
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge]

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No



Newhall Ranch/San Martinez Grande

2003 Chorizanthe Survey Results - Airport Mesa

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 02 - 07 July 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb: UCR

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, south of confluence of the Santa Clara River and Castaic Creek, eastern, southern, and western edges of Grapevine Mesa and scattered ridges there abouts.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 1040-1290' T 17W R 4N ___N___ ¼ Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? _____ Yes __X__ No _____ Unknown

Total # of Individuals = ~1,866,000 plants Is this a subsequent visit? X Yes _ No Compared to your last visit: X more __ same __ fewer

Phenology (plants): _____ % vegetative ~3 % flowering ~97 % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Zamora clay loam and terrace escarpment soils; west side of the mesa immediately adjacent to, and downslope of, agricultural areas. Primarily on south- to southwest-facing slopes with macro-slope gradients typically ranging between 8 degrees and 35 degrees; micro-slope gradients are typically slightly shallower (2 degrees to 16 degrees), but are locally steeper, particularly at two locations where plants were observed on the eroded banks of a dry creek (slope gradients 60 to 68 degrees). Soils color is generally brown (10YR 5/3) California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, E. elongatum, E. gracile, Salvia leucophylla, Ericameria palmeri* var. *pachypus, Mirabilis californica, Lotus strigosus.*

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming; Possible Threats: proposed residential/commercial development.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments: A conservation easement has been placed on approximately 20 acres of this occurrence.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

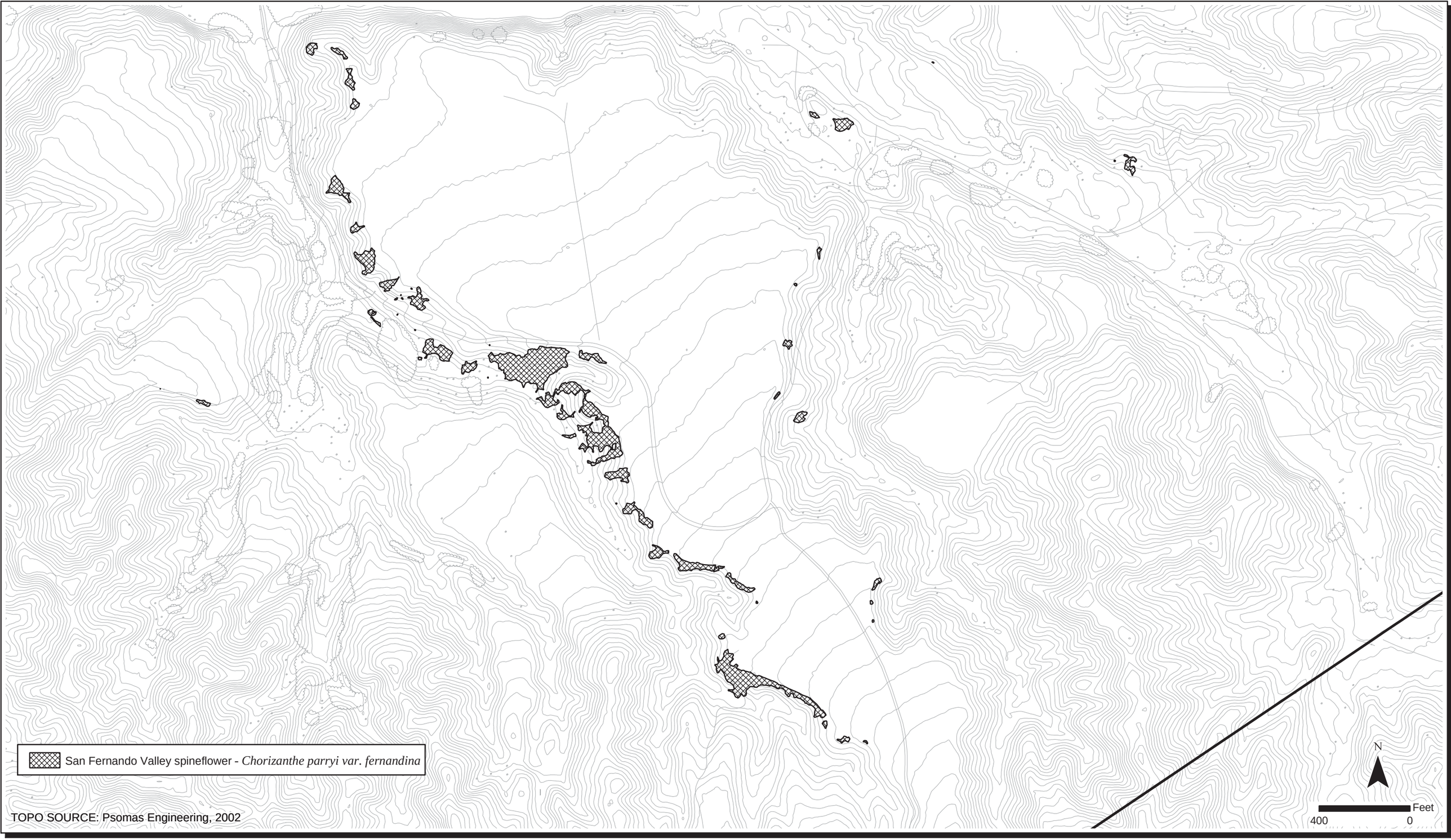
__X__ Keyed in a site reference:
__X__ Compared with specimen housed at:
_____ Compared with photo/drawing in:
__X__ By another person (name): Andy Sanders
__X__ Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No



Newhall Ranch/San Martinez Grande

2003 Chorizanthe Survey Results - Grapevine Mesa

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 25 Jul-02 Aug 2003 County: Los Angeles Collection: yes If yes, #2969 Elvin & Sanders
Mus./Herb: IRVC, UCR, RSA, +

Location: Northern Santa Susana Mountains, Newhall Ranch, southwest of confluence of the Santa Clara River and Castaic Creek, scattered on northeastern side of Long Canyon.

Quad Name: Val Verde
__X__ 7½' ____ 15' Elevation: 1000-1300' T 4N R 17W W ¼ of Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? __X__ Yes _____ No _____ Unknown

Total # of Individuals = ~250,000 Is this a subsequent visit? ____ Yes __X__ No Compared to your last visit: ____ more ____ same ____ fewer

Phenology (plants): _____ % vegetative __~5__ % flowering __~95__ % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

openings in California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Adenostoma fasciculata, Salvia leucophylla, Acortia microcephala, Lotus salsuginosus*

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use-Cattle grazing, farming, Visible Disturbances-removal of oil derricks, Possible Threats-proposed residential/commercial development.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments:

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

__X__ Keyed in a site reference: Munz, Jepson
__X__ Compared with specimen housed at: RSA
_____ Compared with photo/drawing in:
__X__ By another person (name): Andy Sanders
__X__ Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No

San Fernando Valley spineflower - *Chorizanthe parryi var. fernandina*

TOPO SOURCE: Psomas Engineering, 2002

N

300 0 Feet

Newhall Ranch/San Martinez Grande

2003 Chorizanthe Survey Results - Long Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 05-12 Aug 2003 County: Los Angeles Collection: yes If yes, # 2970 Elvin & Sanders
Mus./Herb: UCR, IRVC, RSA, +

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126just east of the Ventura County line, on ridges s of Potrero Mesa and on hill at the west side of the confluence of Potrero Creek with the Santa Clara River

Quad Name: Val Verde T 4N R 17W NW ¼ Sec 3
X 7½' __ 15' Elevation: 1000-1200'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? X Yes ___ No ____ Unknown

Total # of Individuals = ~230,000 plants Is this a subsequent visit? __ Yes X No Compared to your last visit: __ more __ same __ fewer

Phenology (plants): ____ % vegetative <1 % flowering 99 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Slopes faced to the south with bearing ranging from S80W to N78E. Macro-slope gradients range from 5 degrees to 35 degrees, with micro-slope gradients being generally shallower (1 degree to 20 degrees). The substrate is undisturbed; however, extensive cattle grazing has occurred in the past. Vegetation is open California sagebrush-purple sage composed of *Salvia leucophylla*, *Artemisia californica*, *Eriogonum fasciculatum, E. c.f. gracile, Sambucus mexicana, Avena* spp., *Lupinus succulentus.*

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing; Possible Threats: Currently proposed for residential development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments:

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

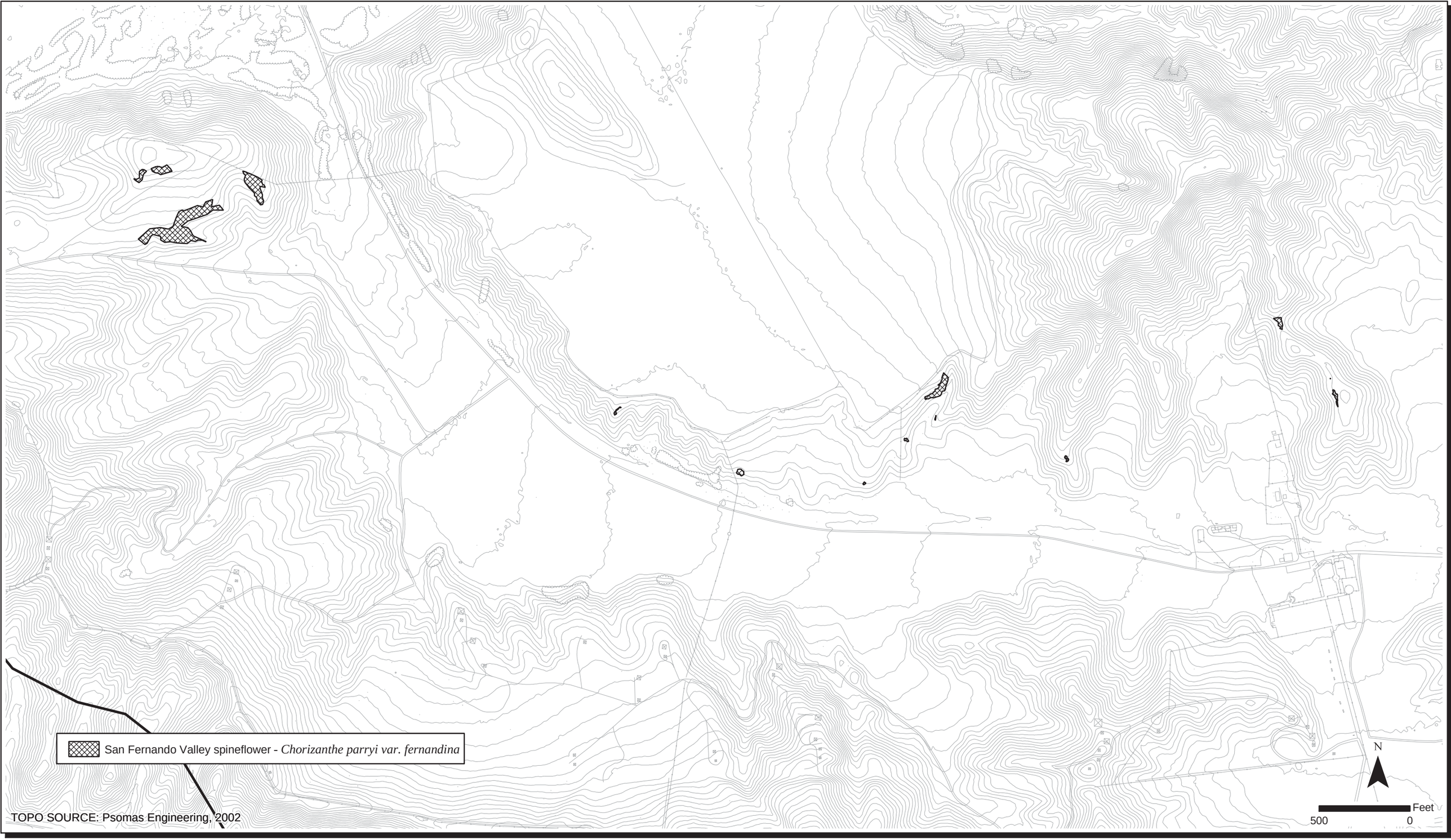
X Keyed in a site reference: Hickman 1993
X Compared with specimen housed at: UCR
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No



Newhall Ranch/San Martinez Grande

2003 Chorizanthe Survey Results - Potrero Canyon

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 18-20 June 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb: UCR

Location: Santa Clarita Valley, Newhall Ranch: north of State Route 126, west of San Martinez Grande Canyon Road

Quad Name: Val Verde T 4N R 17W NW ¼ Sec 3
X 7½' __ 15' Elevation: 1090-1235'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? __ Yes X No ____ Unknown

Total # of Individuals = ~1,124,000 plants Is this a subsequent visit? X Yes__ No Compared to your last visit: X more __ same __ fewer

Phenology (plants): ____ % vegetative 25 % flowering 75 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Elevated slopes and rounded ridge tops underlain by a large ancient landslide that involves bedrock of the marine Pico Formation; soil unit (per Antelope Valley Soil Survey (USDA 1969) is eroded Castaic-Balcom silty clay loam (CmF2), with the organic (O) soil horizon generally absent. Dry Munsell soil color is typically brown (10YR 5/3) and varies from grayish-brown (10YR 5/2) to pale brown (10YR 6/3). Slopes faced to the south or east with bearing ranging from S80W to N78E. Macro-slope gradients range from 5 degrees to 33 degrees, with micro-slope gradients being generally shallower (1 degree to 20 degrees). The substrate is undisturbed; however, extensive cattle grazing has occurred in the past. Vegetation is open California sagebrush-purple sage composed of *Salvia leucophylla*, *Artemisia californica*, *Eriogonum fasciculatum, E. elongatum, E. gracile, Sambucus mexicana, Lotus strigosus.*

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Currently proposed for estate residential development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments:

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Hickman 1993
X Compared with specimen housed at: UCR
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No

San Fernando Valley spineflower - *Chorizanthe parryi var. fernandina*

N

Feet

200 0

OPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Chorizanthe Survey Results - San Martinez Grande Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: July 2003 County: Los Angeles Collection: yes If yes, Elvin #2961
Mus./Herb: IRVC, UCR, RSA, +

Location: Northern Santa Susana Mountains, Newhall Ranch, south of confluence of the Santa Clara River and Castaic Creek, around the edges of Grapevine Mesa.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 1040-1290' T 17W R 4N N ¼ Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? __X__ Yes _____ No _____ Unknown

Total # of Individuals = ~500 plants Is this a subsequent visit? ___ Yes __X__ No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): _____ % vegetative ___ % flowering 100 % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing; Possible Threats: Currently proposed for commercial/residential development.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

__X__ Keyed in a site reference:
__X__ Compared with specimen housed at:
_____ Compared with photo/drawing in:
__X__ By another person (name): Andy Sanders
__X__ Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No

slender mariposa lily - *Calochortus clavatus var. gracilis*

TOPO SOURCE: Psomas Engineering, 2002

N

600 0 Feet

Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - Grapevine Mesa

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Jun-Aug 2003 County: Los Angeles Collection: If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch, southeast of confluence of the Santa Clara River and Castaic Creek, east, south, and west edges of Airport Mesa and adjacent mesas.

Quad Name: Newhall T 4N R 16W W ¼ of W ¼ Sec 3
X 7½' __ 15' Elevation: 1075-1250' T 4N R 17W E ¼ of E ¼ Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? X Yes ___ No ____ Unknown

Total # of Individuals = ~150 plants Is this a subsequent visit? __ Yes X No Compared to your last visit: __ more __ same __ fewer

Phenology (plants): ____ % vegetative ____ % flowering 100 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occassionally with rocky alluvial components. Open to dense California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming, grading/clearing; Possible Threats: proposed residential/commercial development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

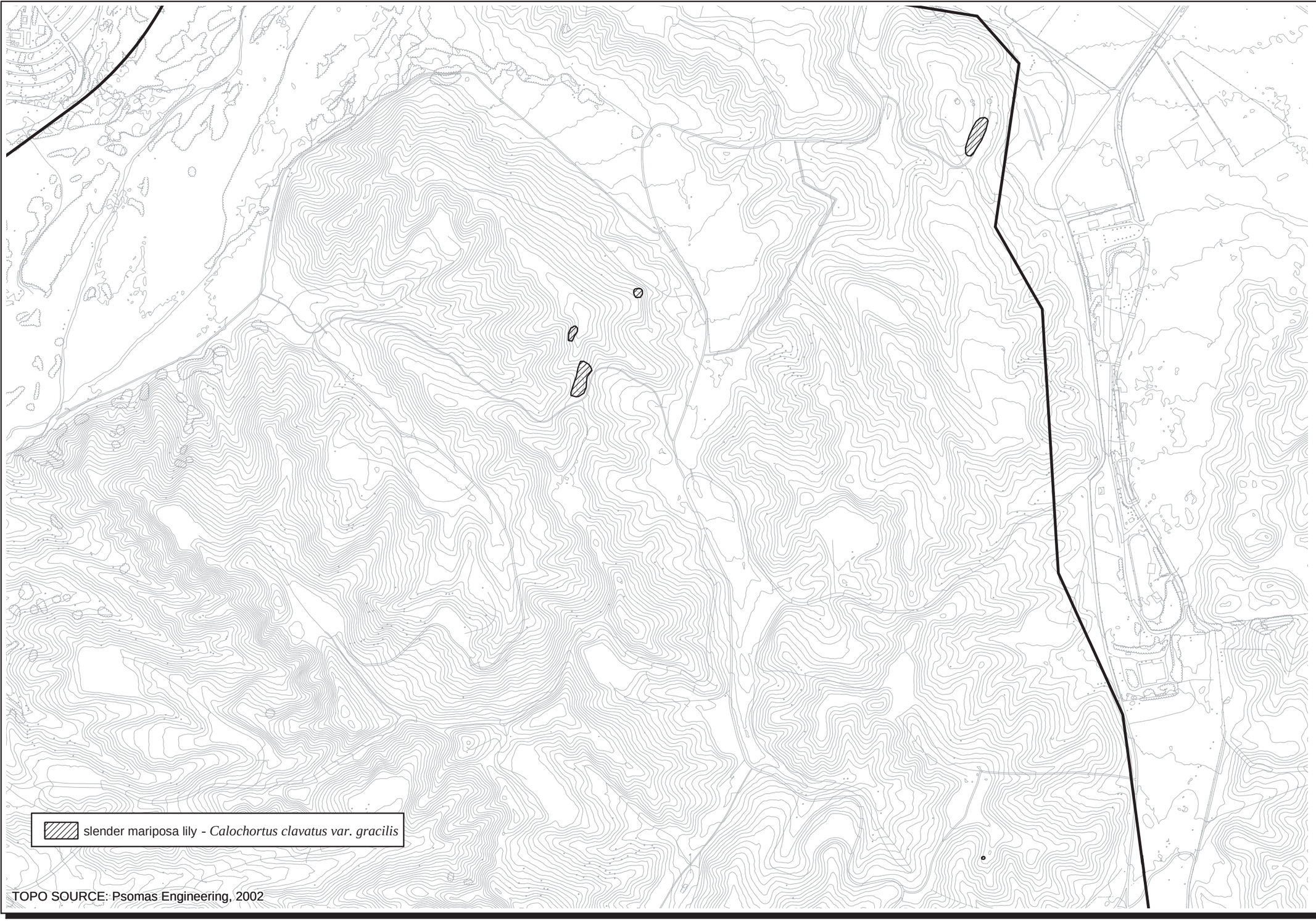
X Keyed in a site reference: Jepson, Munz
X Compared with specimen housed at: UCR, RSA
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone) Kim Marsden

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No



Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - Airport Mesa

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: June to August 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains/Santa Clarita Valley, Newhall Ranch: south of State Route 126 just east of the Ventura County line, on ridges and north facing slopes throughout Potrero Canyon.

Quad Name: Val Verde and Newhall 4N R 17W NW ¼ Sec 3
X 7½' __ 15' Elevation: 1100-1400'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? X Yes ___ No ____ Unknown

Total # of Individuals = ~1,000 plants Is this a subsequent visit? __ Yes X No Compared to your last visit: __ more __ same __ fewer

Phenology (plants): ____ % vegetative ___ % flowering 100 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla, Heteromeles arbutifolia, Rhus ovata*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Portions are currently proposed for estate residential development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

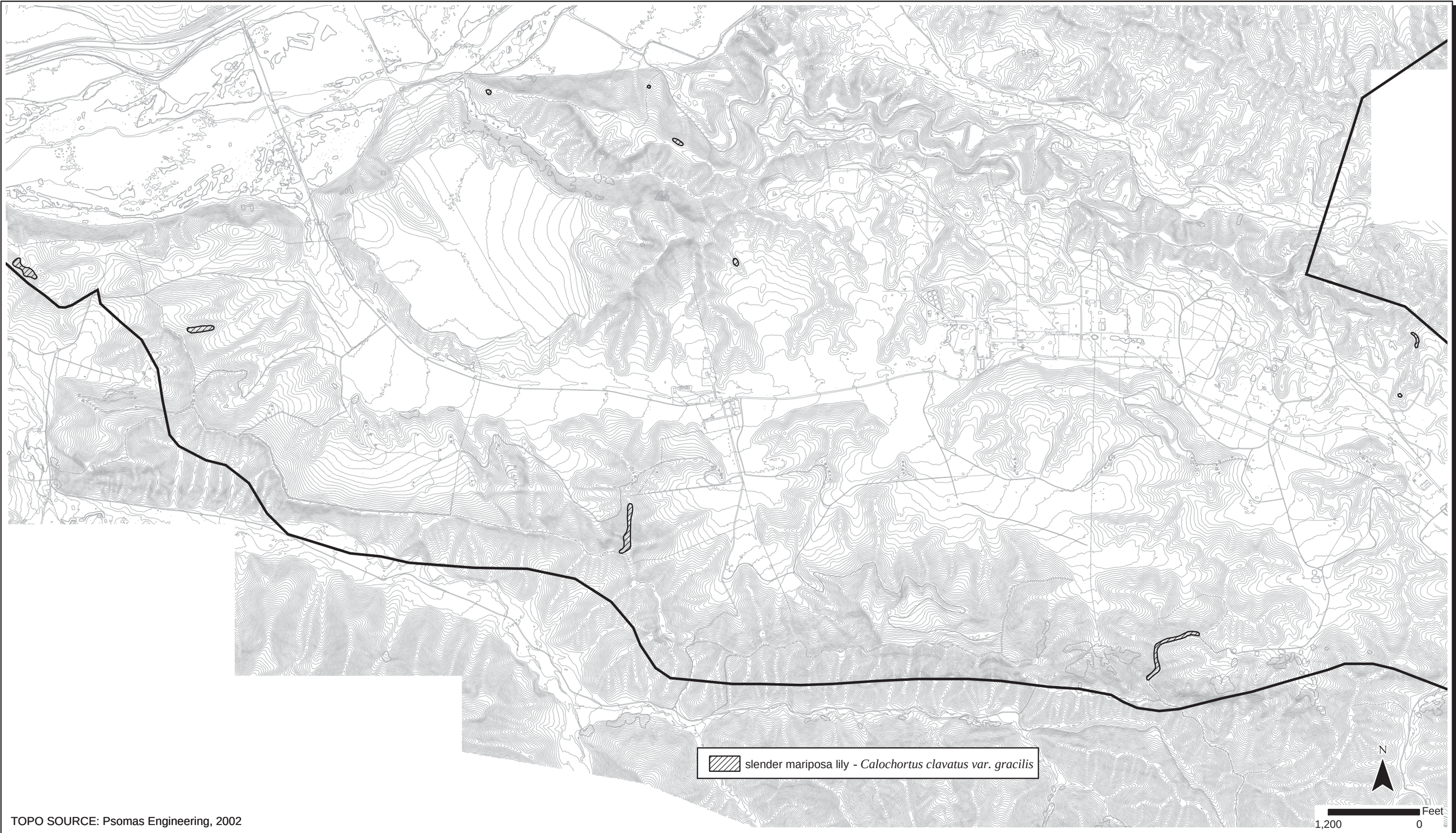
X Keyed in a site reference: Jepson, Munz
X Compared with specimen housed at: UCR, RSA
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No



TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - Potrero Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Jul & Aug 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains, Newhall Ranch, southwest of confluence of the Santa Clara River and Castaic Creek, scattered throughout Long Canyon.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 1000-1300' T 4N R 17W W ¼ of Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? __X__ Yes _____ No _____ Unknown

Total # of Individuals = ~250 Is this a subsequent visit? ___ Yes __X__ No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): _____ % vegetative ___ % flowering 100 % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing; Possible Threats: Currently proposed for commercial/residential development.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

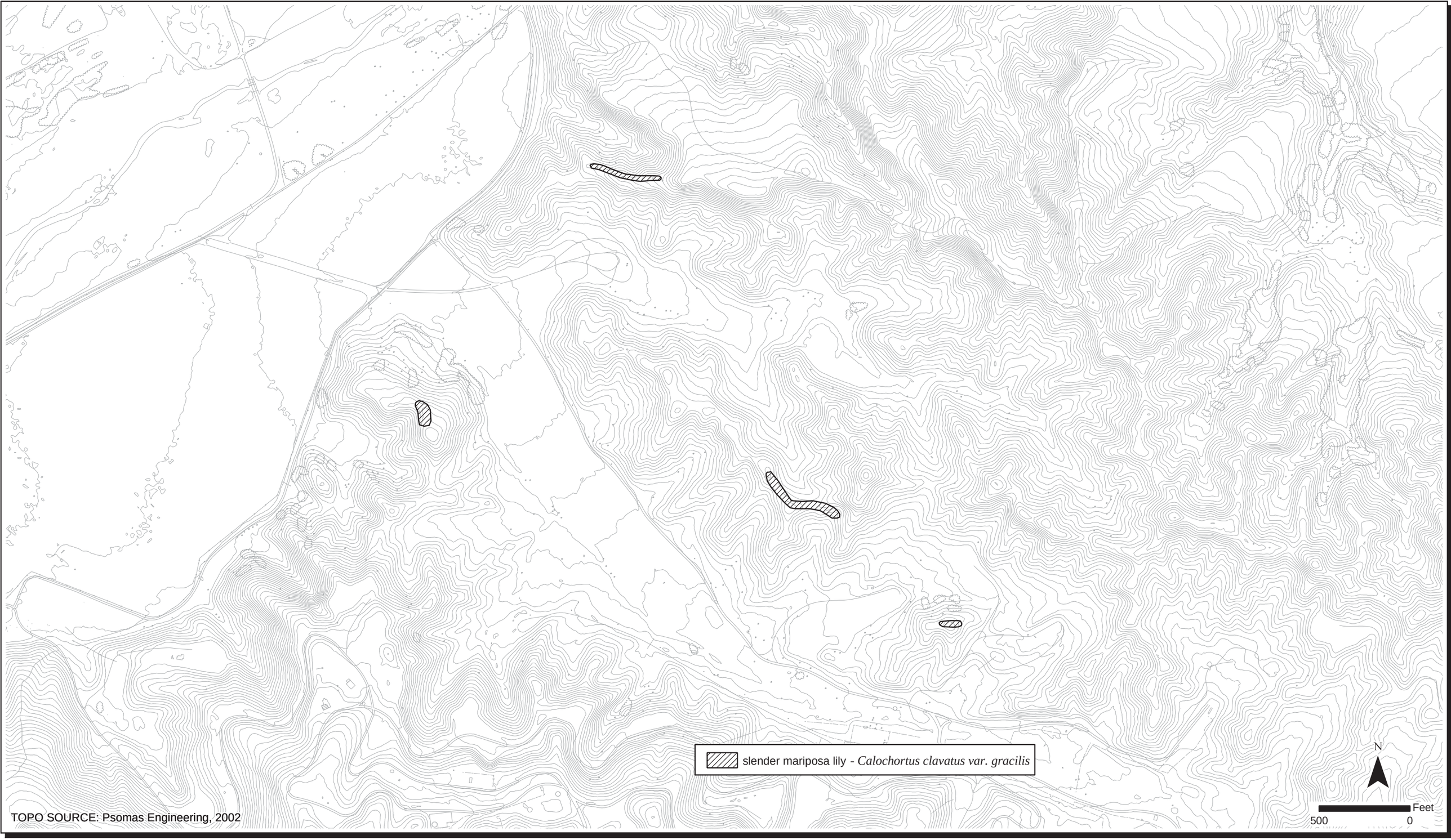
__X__ Keyed in a site reference: Jepson, Munz
__X__ Compared with specimen housed at: RSA, UCR
_____ Compared with photo/drawing in:
__X__ By another person (name):
_____ Other:

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No



Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - Long Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Mark A. Elvin Phone: (760) 942.5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: 18-20 Jun 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains, Newhall Ranch: north of State Route 126, east and west sides of lower San Martinez Grande Canyon

Quad Name: Val Verde T 4N R 17W NW ¼ Sec 3
X 7½' __ 15' Elevation: 1050-1350'

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes ____ No If not, reason:

Is this a new location record? X Yes ___ No ____ Unknown

Total # of Individuals = ~150 plants Is this a subsequent visit? __ Yes X No Compared to your last visit: __ more __ same __ fewer

Phenology (plants): ____ % vegetative <1 % flowering 99 % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Primarily on north facing slopes with macro-slope gradients typically ranging between 0 degrees and 50 degrees. Soils are typically sandstone based occasionally with rocky alluvial components. Dense to open California sagebrush-purple sage with *Artemisia californica, Eriogonum fasciculatum, Salvia leucophylla, Chorizanthe parryi* var. *fernandina*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, fire in recent past (5-10 years); Possible Threats: Currently proposed for estate residential development.

Overall Site Quality: ____ Excellent X Good ____ Fair ____ Poor

Comments: Plants were observed after the bloom. Many fewer plants were observable at this time.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

X Keyed in a site reference: Hickman 1993
X Compared with specimen housed at: UCR
____ Compared with photo/drawing in:
X By another person (name): Andy Sanders
X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
X Plant/Animal	X Slide
X Habitat	____ Print
X Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
X Yes ____ No

slender mariposa lily - *Calochortus clavatus var. gracilis*

N

300 0 Feet

TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Calochortus Survey Results - San Martinez Grande Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Gnaphalium sp. nova*

Reporter: Mark Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Aug 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb: UCR

Location: Santa Clarita Valley, Newhall Ranch, along the south side of the Santa Clara River at the confluence with Long Canyon.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 900' T 4N R 17W W ¼ of Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes ____ No If not, reason:

Is this a new location record? __X__ Yes ____ No ____ Unknown

Total # of Individuals = ~150 Is this a subsequent visit? ___ Yes __X__ No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): __90__ % vegetative __10__ % flowering ___ % fruiting

Population Age Structure (animals): ____ # adults ____ # juveniles ____ # others

Site Function for Species (animals): ____ breeding ____ foraging ____ wintering ____ roosting ____ denning ____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Occurs on secondary benches along the south side of the Santa Clara River. Soils are sandy to rocky alluvium. Vegetation is sparse alluvial scrub with *Malacothamnus sp., Eriogonum fasciculatum, Baccharis glutinosa, 2 different annual Eriogonum spp., Lepidospartum squamatum, Eriodictyon crassifolium* var. *nigrescens*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing; Visible Disturbances: cattle grazing, river scour is taking out part of the secondary benches; Possible Threats: Adjacent upland areas are currently proposed for commercial/residential development and flood control may need to be put in near the occurrence, river scour is taking out part of the secondary benches.

Overall Site Quality: ____ Excellent __X__ Good ____ Fair ____ Poor

Comments: The plants formerly attributed to *Gnaphalium leucocephalum* in CA are not this species, but are actually this undescribed taxon. Andy Sanders (pers. comm.) Indicates that this plant has been collected only a handful of times in the past 50 years from alluvial systems (washes) in Riverside, San Diego, and now Los Angeles counties.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

___ Keyed in a site reference:
__X__ Compared with specimen housed at:UCR
____ Compared with photo/drawing in:
__X__ By another person (name): Andy Sanders
____ Other:

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	____ Print
__X__ Diagnostic Feature	
____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes ____ No

everlasting - *Gnaphalium sp. nova*

N

Feet

200 0

TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Gnaphalium Survey Results - Long Canyon

FIGURE 1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

Document Code _____ Quad Code _____
Index Code _____ Occurrence # _____

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. ***PLEASE ATTACH OR DRAW A MAP ON BACK.***

Scientific name (no codes): *Gnaphalium sp. nova*

Reporter: Mark A. Elvin Phone: (760) 942-5147

Address: DUDEK & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: Aug 2003 County: Los Angeles Collection: yes If yes, # Mus./Herb: UCR

Location: Santa Clarita Valley, Newhall Ranch, along the south east side of Castaic Creek 700m north of the Santa Clara River. Grapevine Mesa is a land-mark 1200m due south.

Quad Name: Val Verde
__X__ 7½' ___ 15' Elevation: 950' T 4N R 17W N ¼ of Sec 3

Landowner/Manager: The Newhall Land and Farming Company, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? __X__ Yes _____ No If not, reason:

Is this a new location record? __X__ Yes _____ No _____ Unknown

Total # of Individuals = ~450 Is this a subsequent visit? ___ Yes __X__ No Compared to your last visit: ___ more ___ same ___ fewer

Phenology (plants): __90__ % vegetative __10__ % flowering ___ % fruiting

Population Age Structure (animals): _____ # adults _____ # juveniles _____ # others

Site Function for Species (animals): _____ breeding _____ foraging _____ wintering _____ roosting _____ denning _____ other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Occurs on secondary benches along the east side of Castaic Creek 700m north of the Santa Clara River. Soils are sandy to rocky alluvium. Vegetation is sparse alluvial scrub with *Eriogonum fasciculatum, Baccharis glutinosa, 2 different annual Eriogonum spp., Lepidospartum squamatum, Eriodictyon crassifolium* var. *nigrescens*, *Tamarix* sp., *Yucca whiplei*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: none; Visible Disturbances: off road vehicles, trash dumping, river scour is taking out part of the secondary benches; Possible Threats: Adjacent upland areas are currently proposed for commercial/residential development and flood control may need to be put in near the occurrence, river scour is taking out part of the secondary benches, trash dumping, off-road vehicles.

Overall Site Quality: _____ Excellent __X__ Good _____ Fair _____ Poor

Comments: The plants formerly attributed to *Gnaphalium leucocephalum* in CA are not this species, but are actually this undescribed taxon. Andy Sanders (pers. comm.) Indicates that this plant has been collected only a handful of times in the past 50 years from alluvial systems (washes) in Riverside, San Diego, and now Los Angeles counties.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

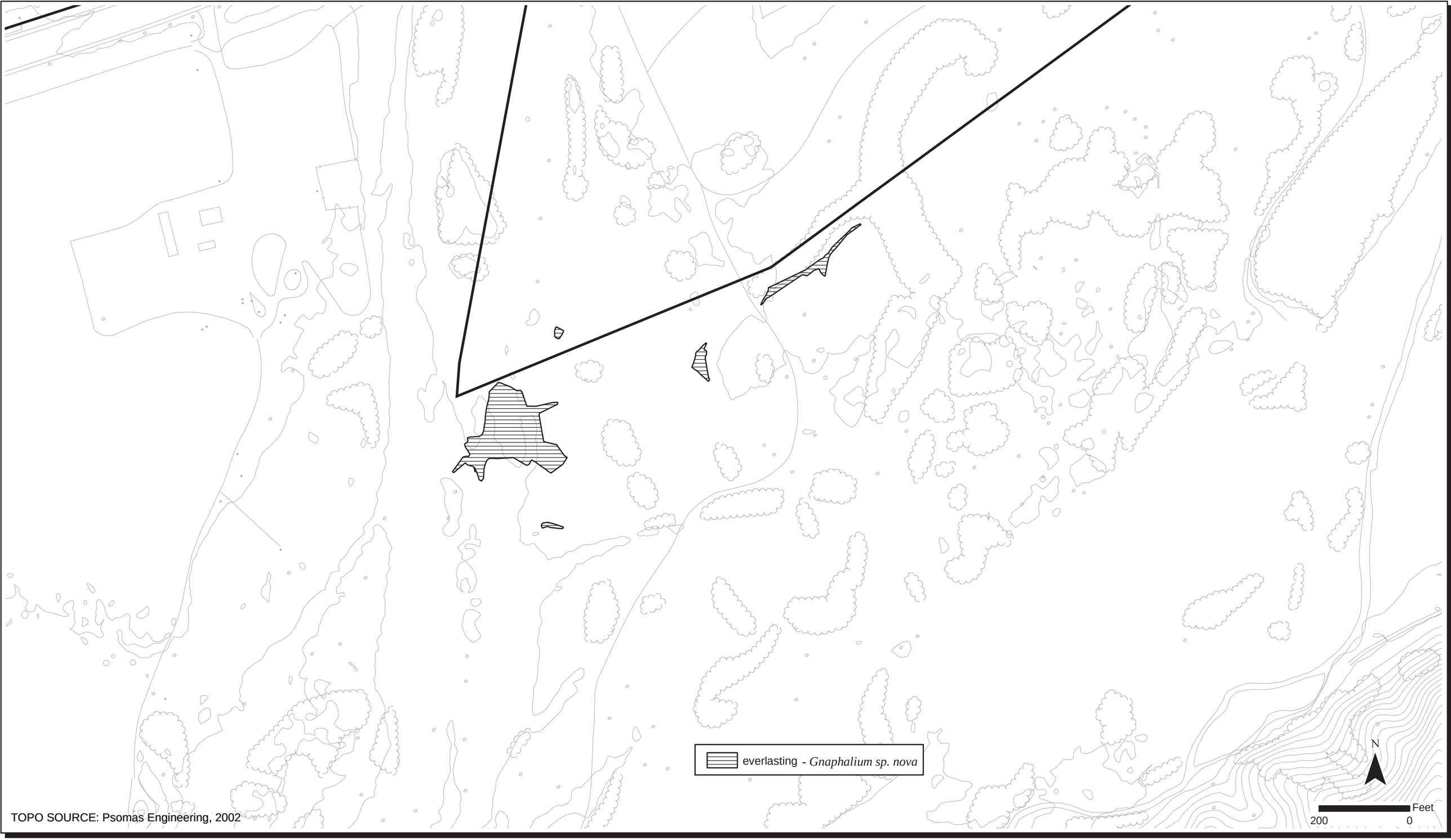
___ Keyed in a site reference:
__X__ Compared with specimen housed at:UCR
_____ Compared with photo/drawing in:
__X__ By another person (name): Andy Sanders
_____ Other:

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject	Type
__X__ Plant/Animal	__X__ Slide
__X__ Habitat	_____ Print
__X__ Diagnostic Feature	
_____ Other	

May we obtain duplicates **at our cost**?
__X__ Yes _____ No



TOPO SOURCE: Psomas Engineering, 2002

Newhall Ranch/San Martinez Grande

2003 Gnaphalium Survey Results - Castaic Creek

FIGURE 1